PULP & PAPER

DECEMBER 1960

TAPPI Engineering Conference

page 67

Fine Paper Mill in B.C.

page 86

Scott Paper's Safety Program

page 97



BOLTON MICTO CORDAN FILLINGS ARE

FIRST ISALES!

BECAUSE BOLTON WAS

FIRST to develop special metals for fillings

FIRST to install complete in-plant heat treating facilities

FIRST to install instrument controlled wood drying kilns

FIRST to install dynamic balancing of filled plugs as standard procedure

FIRST to install and use electronic equipment to inspect knives

FIRST to hardness test each bar in every filling

FIRST to import and use Bethabara for wood separators

FIRST to introduce Microlyzed custom processing

There is no substitute for experience

It takes more than metal and wood to make a Jordan filling. The kind of metal selected and the way it is processed make a world of difference. The same is true of wood separators and the assembly of the knives and woods.

What matters most is performance. That is why Bolton Microlyzed Fillings should always be your first choice. It is with most papermakers.

With Microlyzed fillings you can rely on uniform, effective stock treatment every time. You will find them equal to any refining requirements with more to spare. Microlyzed fillings give long periods of even, uniform wear from every knife in the set, with the proper balance of wear resistance and toughness. Wear between plug and shell knives can be equally balanced.



There is no substitute for Quality

It takes a variety of specialized, highly developed skills to make fillings that out-perform all others. For instance, the photomicrostructural analysis of all raw stock and destructive mechanical properties testing determine exact heat treating requirements. Quality control serves as a double check in meeting established standards through every step of custom processing. Finally, non-destructive tests guarantee that these high standards of quality are present in every set of fillings before shipping — palletized, or in reinforced, sealed, corrugated cartons.

Bolton Microlyzed Fillings are available for every size and make of Jordan currently in use. Included are Wedgeless, Ring Type, Hydro-truss, Hydroflex, Boltobar and others of special design. Our Technical Advisory Service will gladly help you select fillings for your particular requirements.

Microlyzed fillings are unequalled for balanced refining, economy of long life, uniformity, strength, wear resistance and the ease of stripping and refilling — more reason why Microlyzed fillings are first in sales.

Next time specify Microlyzed Fillings by Bolton – the world's largest fillings manufacturer.



John W. Bolton & Sons, Inc. and The Emerson Manufacturing Company, Division

Lawrence, Massachusetts

Now... your tissue machine can be made to run more profitably by easy conversion to

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Suction Breast Roll

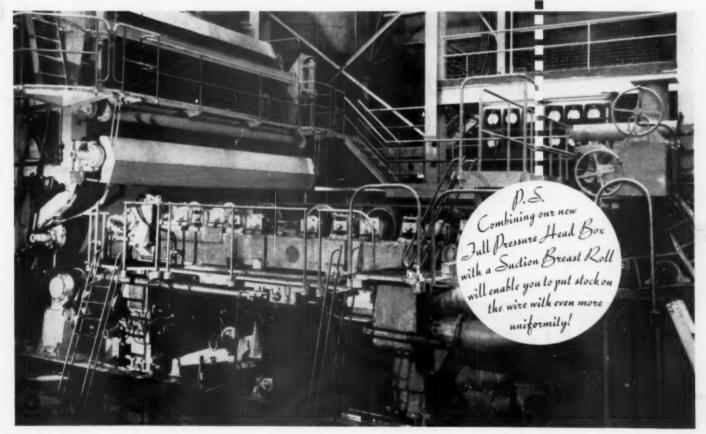
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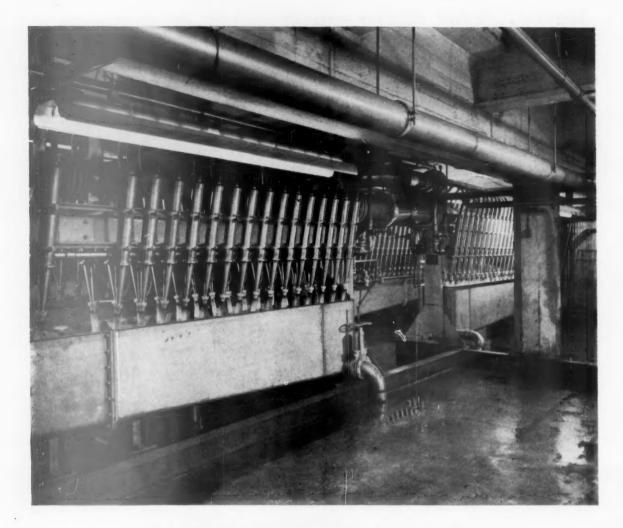
Another "first" from our drawing boards, and further proof of superior engineering that has made Rice Barton a leading paper machinery builder for 123 years. For more information on what these advantages can mean to you write



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Mills that are putting their stock through Bird Cyclean pressure drop cleaning units are not only making paper that is easier to sell but are getting production advantages that pay handsome dividends on the Cyclean investment — fewer rejects, fewer breaks, fewer washups, increased wire life — more as well as better paper per machine per day.

Ask us to show you what Cycleans can do for you.

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PULP & PAPER

Reader's Guided Tour

VOLUME 34

Tappi Engineering Conference	67
How Data Sheets are Processed	68
Corrosion Bill is \$250-600 Million	69
Trend to Purchase Power Seen	70
New Thoughts on Water "Shortage"	71
Calender Roll Bending Stirs Interest	73
Computational Science is Here	74
Process Control Man is a Key	75
Launch Cost Reduction Survey	76
Air Caps Take Spotlight	77
Watchword is Lower Costs	78
Puget Sound By-Products from Spent Liquors	79
Continuous Drum Chipper Reduces Damage	80
International Paper Off-Machine Blade Coating	84
Island Paper Fine Papermaking in B.C.	86
Asia's Needs Studied in Tokyo at UN Meeting	92
Progress in Bagasse Pulping in Hawaii	94
Safety at Scott's Winslow, Maine, Mill	97
Index to PULP & PAPER 1960	100

PULPWOOD SECTION

Pulpwood Trucks	104
Availability of Wood for Pulp in Pacific NW	107
Sky Car Logs Inaccessible Areas	112

OTHER DEPARTMENTS The Editor Reads His Mail

The same near the first	_
Monthly Report	7
Strictly Personal—News of People	119
New Equipment and Supplies	143
Literature	152
Meeting Dates Calendar	157
Index of Advertisers	165
The Last Word—P&P Editorial Views	166

67 Biggest, Best Engineering Meeting

That's what many are saying about the 15th TAPPI Engineering Conference at Jacksonville. What made it the biggest was the record turnout, topping 1,050. What made it the best was the quality of the papers and the discussions on such hot topics as high velocity drying, blade coating, corrosion and instrumentation..

As in past years, PULP & PAPER presents a special round-up of what was really significant at "Jax." Each subject is reviewed by an author who is an expert in that field.

Ingraham—Engineering Data	68
Hopper—Corrosion	69
Sorenson—Electrical Engineering	70
Moggio—Sanitary Engineering	71
Mudgett—Mechanical Engineering	73
Thode—Chemical Engineering	74
Powell—Process Instrumentation	75
Sargent—Economic Engineering	76
Holt & Vianey—Drying	77
Kendall—Materials Handling	78

80

A New Approach to Chipping



The continuous drum chipper slices the log parallel to the grain producing an undamaged chip of uniform thickness and at high production rates. Chip uniformity is of special interest for sulfite pulp, may have potentials for kraft, continuous cooking and NSSC.

MB&PR's Island Fine Paper Mill



Growing Western Canada now has what is said to be its first fine paper mill. This report probes possibility of other fine paper mills in British Columbia and stresses the extra-special features of the paper machine.

CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif. C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to PULP & PAPER, above address. Include both old and new addresses.

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Belt carries 3½ million pounds of wet pine chips a day

"Riffle Grip" belt takes chips up incline, does it fast

THAT belt carries wet pine chips from an elevator belt to storage silos in an Arkansas paper mill. But, several years ago, when the capacity of the chipper was increased by 20%, the smooth belt being used couldn't carry chips away fast enough. They'd slip back on the belt, pile up at the unloading area, tumble back down the elevator shaft.

The plant superintendent took his problem to a B.F.Goodrich distributor, who recommended the BFG "Riffle Grip" conveyor belt. The belt is made with a series of extra-tough rubber ridges molded into the cover. The tread that these ridges form holds the chips in place on the belt, takes them up the incline, doesn't let them slip back.

The B.F.Goodrich belt completely solved the problem, permits higher belt speed, and a 20% increase in production. It's been in use over three years now, handling 3½ million pounds of chips in an average day.

B.F.Goodrich distributors have exact specifications for the B.F.Goodrich conveyor belt described here. And, as factory-trained specialists in rubber products, they can answer your questions about the many products B. F. Goodrich makes for industry. B.F. Goodrich Industrial Products Company, Dept. M873, Akron 18, Ohio.



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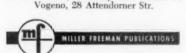
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The Editor Reads His Mail



Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

"A Strong Feeling"

-Silsbee, Texas

Editor: I consider PULP & PAPER one of the best of industry magazines and I have had a strong friendly feeling for your very personable representatives who were here when the East Texas mill started up.

FRED W. NASON (Retired Dir. of Research & Planning) East Texas Pulp & Paper Co.

Comments on Bowater Board Story in September issue

-Elizabeth, N.J.

Editor: PULP & PAPER has printed a very interesting article on the Bowaters mill at Catawba, S.C. While we agree with a great deal of the information contained in this article, we do take exception to some of the

We built a mill in New Zealand 20 years ago . . . (now operated by) N.Z. Forest Products Limited which has an average production over a year's time of more than 600 cycles per day. This is significantly faster than Bowaters . . . operation.

Regarding the comparative per capita figures between the U.S. and Europe, although we agree with the premise, we believe the statistics are wrong. The hardboard market in the U.S. last year was supposed to have been 2.5 billion sq. ft. or 10.3 pounds per person. Since Europe has a population of over 400 million people, to equal our consumption they would have to have a total consumption of 5.9 billion sq. ft.; and to have five times the American consumption per person, as the article states, they would have to be making 29 billion sq. ft., which is impossible.

It is true, however, that the consumption in other countries surpasses that of the U.S. In New Zealand it is almost five times the consumption here. It is quite obvious, therefore, that the American market can be considerably extended as stated.

We also take exception to the (thesis) that Americans want a "light, pleasing color . . . a lot of board is too dark." English board is light in color . . . American board, however, is dark and always has been dark. Americans are used to the dark color, due to their experience with wood and have the impression that anything dark colored is strong.

W. F. TAYLER President The Tayler Corp.

Editor's Note: We regret that space does not permit us to run Mr. Tayler's very interesting letter in its entirety. As to the contention that Americans prefer dark colored board, this appears to be a difference of opinion in the field of market research and the public's reaction to Bowater Board will probably give the best possible answer to the question.

Best Plant Photographs

Pittsburgh, Pa.

Your article on Marathon's new #3 machine includes the best photographs we have seen to date on this plant addition. We would like to purchase several of these photographs for our own company magazine and for the project file.

GEORGE B. MOTHERAL The Rust Engineering Co. Director of Public Relations

Question on Marathon

Editor: I'm still intrigued by your article on the new paperboard machine at Marathon. One thing puzzles me, and perhaps your editor or someone at Marathon can answer my question. When you say that it took only one hour to break in the blade on the trailing blade coater, was any coating run during this breaking-in period or was the blade just "honed" against the dry web. I would appreciate some clarification on this point.

Incidentally, this was an extremely well-written article.

Name withheld upon request (Editor's Note: Since this letter came in just as we were going to press, there was no time to check with P&P's Southern Editor William F. Diehl, Jr., who authored the article, nor with Marathon. We will publish this information in our next issue.



Pulp from Gottesman means...

SOMETHING SPECIAL!

Bleached and Unbleached Sulphite • Bleached Hardwood • Groundwood Bleached, Semi-Bleached, and Unbleached Kraft

GOTTESMAN-CENTRAL NATIONAL ORGANIZATION

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MONTHLY REPORT - WORLD NEWS

TWO MAJOR BREAKTHROUGHS make news this issue. First, Crown Zellerbach and Hawaiian sugar industry have developed pulping process to make quality news and other papers from bagasse and have made patented processes and other technical assistance available to Rohtas-Industries for building newsprint mill in India. Second breakthrough is commercial success of drum chipping at Anglo Canadian and Gaspesia mills. See special reports on both these developments in this issue.

ECONOMIC SITUATION IS A PUZZLE says Howard E. Whitaker, president, APPA and chairman of board, The Mead Corp. speaking at special SAPI dinner in his honor. Just what is hard to figure, he says. Federal Reserve Production Index is at a new high level for about 8 or 9 months; consumer spending power is as high as it's ever been; Europe has recovered and has unprecedented boom and U.S. GNP has reached new level of \$500 billion plus. But . . .

BE REALISTIC ABOUT CAPACITY, says Mr. Whitaker. There is a spread of about 20% in white paper between available production capacity and market demand. Forecast of demand in next year or two is unlikely to average at best more than 80% of what industry can produce on all-out basis. Yet...

EXPANSION STILL GOES ON, cites Mr. Whitaker. Each company has its own reason for building to meet anticipated sales. BUT, the combined effect in cold figures and statistics indicate future supply to be at least two years ahead of probable consumption growth, and in some lines, it's three years.

St. Regis Paper Co's. modern high speed \$1.5 million bag plant is now in production at Los Angeles geared for growing California, Arizona and Nevada markets. Capacity is 100 million multiwall bags/year, which will need some 33,000 tons of

kraft, most of which will come from St. Regis' Tacoma, Wash. mill where a \$30 million expansion is underway... New corrugated container plant of the packaging division of Olin Mathieson is now in operation in St. Louis, Mo. 38,000 sq. ft. plant has capacity of 25 million sq. ft. of corrugated containers/year. This is sixth container plant opened by O-M in 18 months...

GROUND-BREAKING ATTRACTS 10,000. . . . to the site of the new Southern Land, Timber and Pulp Co. paper mill, expected to cost \$42 million and employ 450 workers with annual payroll of \$4.5 million. Production has been announced for 1962. The mill site is at Cedar Sprints, Ga., 16 miles southwest of Blakley, Ga., on the Chattahoochee River. Sen. Herman Talmadge was the top speaker at ceremonies.

J. E. SIRRINE CONTRACTED . . . as consulting engineers to build the mill which will produce about 685 tons a day of unbleached kraft liner-board initially. The first machine now ordered, will be a 280 in. Beloit capable of producing more than 1,000 tons a day at its maximum eventual output. Provisions will also be made in the foundation to install a newsprint machine and for erection of bleaching facilities. It is anticipated that the third machine put into operation will probably be a tissue machine.

NEW OPAQUE THIN PAPER, called Thinpaque has been announced by Allied Paper Corp. Qualities: increased opacity, excellent runability, no problem with "finger moisture" when turning pages, more pressure for binding without pages sticking together and a bulk of 1600 pages/inch from 25 x 38-19 lb.

NEW NON-WOVEN PROCESS has been developed to make non-woven fabrics on papermaking equipment by Du Pont Co. Fibrid is the name for the new fibrous form of synthetic polymeric material and textryl describes the non-woven structures made through use of fibrids.

REPORT NO. 12,108 OILGEAR OLD-DOWN AND LIFT SYSTEMS

From Oilgear Application-Engineering Files

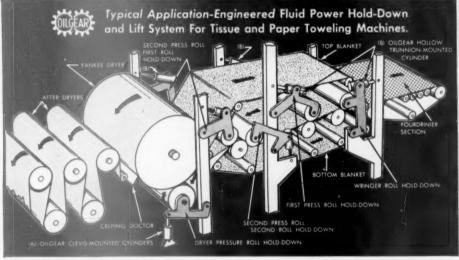
HOW OILGEAR HOLD-DOWN AND LIFT SYSTEMS INCREASE ROLL LIFE—IMPROVE PRODUCT QUALITY

USER: Scott Paper Company, Chester, Pa.; Everett, Wash.; Mobile, Ala.; Fort Edward, N.Y.

PROBLEM: To supply hold-down and lift systems for rolls on paper machines, paper coating machines, super calendars, laminating and similar processing machines - that can be accurately controlled from a simple remote control panel.

USER REQUIREMENTS: 1. Provide constant, uniform, preset roll pressures. 2. Smooth lowering and/or forcing of pressure rolls downward to avoid damage, such as fracturing or flatting. 3. Fast, easy, positive selection of such functions as "Lower," "Hold Down," "Release,"

"Lift," "Hold Up," "Off." 4. Accurately, infinitely vary the pressure on either end of each roll independently over a wide range, at any time, to balance the opposing forces created for most efficient machine operation and product quality. 5. A direct-reading, constant, visual indication of the pressure and force exerted on either end of each roll. In addition, the systems must be simple . . . clean . . . easy to install and maintain . . . facilitate replacement of worn rolls . . . trouble-free, dependable, heavy-duty, for continuous, 'round-the-clock





SOLUTION: Oilgear Application-Engineered Hold-Down and Lift Systems consisting of Oilgear Heavy-Duty, Constant or Variable Displacement Pumps that supply Fluid Power to Oilgear "Custom-Quality" Cylinders through separate Oilgear Valves on a remote control panel - provide smooth, positive motion and steady, preset holding pressures. Cylinders can be mounted directly, or through mechanical linkage, to pressure roll bearing ends. Simplicity of pump drive and installation keep machine cost at a minimum. Remote Control Panel provides fast, positive selection of all functions — operator can "Lift," "Hold Up," "Release," "Lower." "Hold Down" — at any time; accurately, infinitely vary pressure on either end of each roll independently, and have constant, direct-reading, visual indication of pressure and force being exerted at bearing ends of each roll.

ONE USER STATES - "The control panel indication is so accurate that a worn, 'off-balance' or out-of-round roll can be readily detected."

Another User Reports - "Oilgear is far superior to other systems . . . direct gage readings have enabled us to experiment with varying degrees of pressure on the rolls, so that we can operate with less pressure than we hitherto thought feasible. This has resulted in improved product quality and longer roll life."

Top Photo: One of the Oilgear Hold-Down and Lift System Control Panels as installed with each of Scott Paper Company's two, new tissue machines in their Southern Division Mill, Mobile, Ala.—symbolized in the schematic drawing, left. Daily production from these machines averages 200 tons of Scott's bathroom tissues, toweling and wipers for household and industrial use. Right:

A typical Oilgear Heavy-Duty "Power-Pak"—Variable Displacement Pump, electric motor drive, and reservoir base — used with Hold-Down and Lift Systems.

Oilgear is no "stranger" in the paper industry . . . other Oilgear Linear Drives are in operation on pulp log splitters and pulp baling presses. Similarly, the highly efficient, long-life, Oilgear Heavy-Duty Variable Speed Rotary Drives are compiling enviable records on special purpose paper machine sections . . . on complete paper machines ... on multi-color printing press drives . . . or unwinder and winder drives . . . on laminating and coating machine drives. It's well worth your while to consider Oilgear - "for the lowest cost per year!

For practical solutions to YOUR linear or rotary motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements, directly to ...

THE OILGEAR COMPANY

Application-Engineered Fluid Power Systems 1592 WEST PIERCE STREET . MILWAUKEE 4, WISCONSIN Phone: Mitchell 5-6715 . . . Direct Distance Dialing Code — 414

MONTHLY REPORT - WORLD NEWS

SMALL SCALE MILLS GROW in India with about 29 small units coming in with total capacity of 72,220 tons/year. G. D. Somani, member of the Indian parliament, told a TAPPI meeting in New York. With increased tempo on industrialization in Third Plan period in India, he says, demand for paper is bound to be more and diverse to meet growing demands for literacy and mass education; and for packaging requirements of new industries. More pronounced is need for specialty papers to meet specific and exacting needs of consuming industries. About 15,000 tons of bagasse is now being used for papermaking but potential is great as present production of sugar cane is about 50 million tons.

ANOTHER PULP MILL FOR INDIA is in sight in Madras State, India. Seshasayee Paper and Boards Ltd. will build \$12 million integrated mill to produce 60 long tons/day of printing and writing papers from bamboo and sugar cane bagasse pulps. A 20 million rupee loan was recently authorized by Export-Import Bank of Washington. Parson & Whittemore South Asia Co. will direct overall planning, engineering, equipment supply, erection and startup of the mill.

OFF-MACHINE COATING GAINS in favor in the current see-saw battle with on-machine coating according to one paper machinery manufacturer. Pendulum had swung to on-machine a few months ago as P&P reported; now it's going the other way.

U.S. PAPER INVESTMENTS ABROAD total some \$811 million (including \$687 million in Canada). Actual overseas investments excluding Canada reached \$124 million with \$54 million in Europe, \$50 million in Latin America, \$13 million in Asia, \$3 million in Africa and \$4 million in Oceania.

BIG RISE IN ASIA'S PAPER CONSUMPTION seen by FAO which says Asia will soon consume as much paper as pre-war world. Current consumption is about 6,500,000 tons, of which 250,000 tons are newsprint. In past decade Asia's output has increased fivefold, still net imports of pulp, paper and board have more than doubled in value from \$77 million in 1949 to more than \$160 million in 1957-1958. Total demand for paper and board in Asia, Far East and Mainland China is estimated to reach 25 million tons by 1975.

HALIFAX PAPER CO. PLANS NEW EXPANSION will spend nearly \$2 million to increase pulp capacity from 740 tons at present to 800 tons a day, including 75 tons of hardwood pulp to be made from purchased chips. Rust Engineering Co. has started engineering work with construction planned soon. Additions will include two new digesters, pulp washer, a lime kiln and other auxiliary equipment.

RAYONIER WAS THE FIRST . . . to ship cargo from the new Brunswick, Ga., State Docks, newest Atlantic coast port. Rayonier shipped 1100 bales of chemical cellulose from its nearby Jesup plant, bound for Belgium. Noted at the ceremony: Rayonier is now shipping some 56% of its total Jesup production to world markets.

SAFETY MEETING PROCEEDINGS . . . from the annual conference held at Castle-In-The-Clouds, Tenn., by Southern Pulp and Paper Safety Assn. are available without charge by writing John Turner safety and training coordinator, Bowaters Southern Paper Corp., Calhoun, Tenn.

ATLANTIC COAST LINE CONTINUES ITS WORK WITH PAPER INDUSTRY . . . has just announced orders for 200 giant-sized woodchip cars, needed to fill demand created by widespread shipper acceptance of this type car. They will bring to 400 the number of oversize hoppers in the ACL fleet.

RIEGEL CAROLINA ADDS COVER PAPER TO ITS LINE . . . of coated printing papers. The new cover stock, which will accept both letterpress and offset, is 100% bleached kraft coated on one side and smooth printing bristol finish on the back.

Which of these 3 products and services can you use from BECCO?

New Cold Caustic **Bleach Process**

Looking for a way to use greater amounts of low-cost, more plentiful pulp-without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique® which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.



Bleach Plant in a hurry?

By now, you've probably heard about Becco's Dryer Steep Bleaching Process for insuring brightness permanence by spraying Hydrogen Peroxide across the pulp sheet ahead of the dryers. And you probably know that although the process is patented, Becco will grant a perpetual license for just \$1.00.

But there may still be a question in your mind as to how you can prove this out in your own millhow you can set up a bleach plant in a hurry.

Becco has the answer to this, too. We'll be glad to provide you with a complete "bleach-plant kit" for as long as you need it - consisting of all the equipment needed to make up peroxide bleach liquor and spray your production sheet.

Here's an opportunity for you to prove to yourself, quickly and easily, that this Becco process will maintain your layboy brightness level - even improve it - through shipping and delivery.

If you'd like to take us up on this offer, drop us a line, or mail the coupon below And of course, even after we demonstrate, you incur no obligation.



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Years of experience in paper and pulp processing have produced a library of technical information which is available in individual bulletins, free on request. Use the coupon below to let us know which you'd like to receive.

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- No. 32 H₂O₂ Bleaching of Chemicals and Mechanical Pulps.
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- No. 64 Development Studies on Last-Stage H2O2 Bleaching of Alkaline Pulps.
- No. 65 Peroxide Bleaching of Southern Pulps.
- No. 66 Becco Laboratory Procedures for Pulp Bleaching, 1955 Ed.
- No. 91 Peroxide Bleaching of Chemi-Mechanical Hardwood Pulps.
- No. 92 Peroxide Bleaching of Chemical Pulps.

BECCO fine

BECCO CHEMICAL DIVISION, FMC 161 East 42nd Street New York 17, New York

Gentlemen:

Please have a Sales Engineer give me more information on Becco's Cold Caustic Bleach Process.

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BECCO CHEMICAL DIVISION. FMC 161 East 42nd Street New York 17, New York

Gentlemen:

Yes! We need a "bleach plant in a hurry". Please send us more information about Dryer Steep Bleaching.

FIRM

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BECCO CHEMICAL DIVISION, FMC

161 East 4 n . . eet New York 17, New York

Dept. PP-G

Please send me a copy of each of the following bulletins:

NAME

FIRM.

ADDRESS.

STATE

MONTHLY REPORT - WORLD NEWS

HOPSCOTCHING NORTH AMERICA. . . . Continental Can Co's. Augusta, Ga. pulp and paper mill is now on stream. Features: continuous kraft cooking, cold caustic hardwood pulping and on-machine coating of bleached paperboard. . . . West Virginia Pulp and Paper Co's. Luke, Md. mill has reportedly started up new coated publication grades paper machine with 4 onmachine trailing blade coaters and eight "air-cap" dryers. . . . Barcon Inc.'s lignin liquor processing plant at Appleton div. of Consolidated Water Power & Paper Co. is being expanded 150% to meet increased demand for dried lignin products. Plant now operates on 7 day week. . . Pacific Coast Paper Mills plans \$1,250,000 expansion including modernization of two paper machines (\$400,000) to increase production by 6,500 tons/ year; construction of new converting and storage building (\$700,000) and installation of \$150,000 converting machinery. . . . Sandy Hill Iron & Brass Works is now licensed to make machinery for producing Clupak extensible paper. The first licensee in the U.S., Beloit Iron Works, has made 13 extensible units and is working on two others. In Japan, Mitsubishi Heavy Industries, expects to complete three units soon. . . . Knowlton Bros., Watertown, N.Y., have installed a Clupak unit on their pilot Fourdrinier to study applications of Clupak in specialty papermaking. . . .

Hobson Miller Paper Co. Inc. becomes part of the Saxon Paper Corp. . . . Thomas Bonar Co. (Canada) will-add another plant to its chain across Canada at Fredericton, N.B. to make paper bags for sugar and potatoes. Cost is estimated at \$575,000. . . Keyes Fibre Co. will build a new plant near Sacramento, Calif. . . . Fraser Paper, Ltd's. new bond paper machine at Madawaska, Maine had a successful start up. The John Inglis machine is 234-in. wide and will add some 45,000 tons to Fraser's annual capacity.

More Hopscotching. . . . Lignin Products Co., subsidiary of Robeson Process, Inc., has started up a by-product chemical plant in Johnsonburg, Pa. which will use spent cooking liquor from New York and Pennsylvania Co's. sulfite pulp operations. . . . Union Bag-Camp's Savannah plant continues its record-breaking ways with 2,887 tons of products on Sept. 28. . . . Since acquiring California paper mills and corrugated container plants of Quaker Container Corp. and Cadillac Container Co., Western Kraft Corp. is now coordinating production facilities which include closing the Cadillac paper mill and container plant at Oxnard, setting up a produce packaging dept. with headquarters at Vernon and formation of a container development dept. specializing in developing corrugated containers for produce. . . Georgia-Pacific Paper Co's. \$1.5 million corrugated box plant will be built at Olympia, Wash. The 120,000 sq. ft. plant will swing into production March, 1961 making corrugated boxes and special containers with capacity of about 25 million sq. ft./month.

KIMBERLY-CLARK SEEKS MERGER with Ralph L. Smith Lumber Co., California timber company. Smith headquarters at Anderson where it has a 150,000 bd. ft./day sawmill plus three other sawmills with rated daily capacity of 200,000 bd. ft. plus re-manufacturing plant at Red Bluff. K-C would build a pulp-paper mill at Anderson. . . .

WASTE DISPOSAL PLANT to cost \$431,700 is planned by The Champion Paper & Fibre Co. Waste pumping station will have capacity of 24 million gpd of waste, 105-ft. dia. by 12-ft. deep clarifier and thickener and a sewer to discharge treated waste. Gibbs and Hill, Inc. engineered the plant with Champion's stream improvement and engineering depts. . . .

ALLIED PAPER SEEKS ANOTHER MERGER, this time with Connecticut Manifold Forms Co. This makes sixth business forms company purchased by Allied since April. Others are Egry Register Co., Stephen Green Co., Carmax Corp., American Register Co. and the Charles E. Brown Printing Co. . . .

why you should see roots first for all vacuum requirements

ROOTS' "Dual-Ability"

Offers

Centrifugal and

Rotary

Positive

Equipment

to 550 hp steam turbine in New York paper mill.

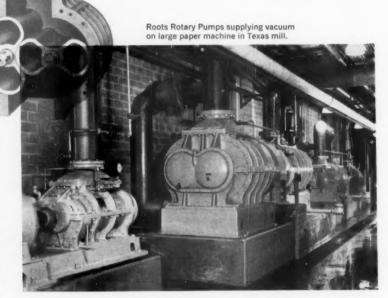
Roots Multistage Centrifugal Exhauster connected

Roots Rotary Vacuum Pumps and Roots Centrifugal Exhausters are virtually free of maintenance because both are simple, rotative machines. However, each has distinct operating characteristics and each has an important, preferred application in certain paper mill operations. That's what makes Roots' "Dual-Ability" so important — because Roots offers both types to the industry.

Rotary vacuum pumps are constant volume, variable pressure machines; centrifugal exhausters (available with multiple nozzles) are essentially constant pressure, variable volume units. When Roots appraises your vacuum requirements, it is from the unbiased position of being able to recommend and supply the type best suited to your needs.

Hundreds of Roots Rotary Vacuum Pumps installed throughout the United States, Canada and other countries testify to their wide acceptance on paper machine requirements. In the centrifugal field, a Roots Multistage unit has been in service for 13 years supplying vacuum requirements for paper machines in a New York mill. Roots Singlestage Centrifugals are being utilized for specific vacuum applications on several U.S. and Canadian paper machines.

The next time you consider vacuum equipment, talk first to ROOTS — first in the field of air and gas handling.



Write for Bulletins 120-B-14 (Centrifugal Exhausters) and VP-158 (Rotary Positive Vacuum Pumps).



ROOTS-CONNERSVILLE BLOWER DIVISION • 1260 Willow Ave., CONNERSVILLE, IND. In Canada – Roots-Connersville Blower (Canada), Ltd. • 629 Adelaide Street, West, Toronto

MONTHLY REPORT - WORLD NEWS

REED MOVES INTO CANADA. Albert E. Reed and Co. Ltd. in agreement with London Daily Mirror makes international news. The mass circulation newspaper has agreed to exchange its 50.24% interest in Anglo-Canadian Pulp and Paper Mills Ltd. and the whole of the ordinary capital of Imperial Paper Mills Ltd. for shares in Reed. Of the other 49.76%, 14% are held by the Mirror's sister paper, the Sunday Pictorial and another 5% by another British newspaper group. Rest are registered in Canadian names, reports the Toronto Globe & Mail.

WHERE WE STAND . . . Paper and paperboard operating rates for first 10 months are above 90% rate. Paper averaged 93.9% for 1960 vs. 92.4% in 1959. Paperboard averaged about 91% vs. 92% in 1959. . . . Wrapping Paper Sales, says NPTA, for first 9 months of 1960 were 1.25% ahead of 1959. . . . Fine Paper sales were about 4.88% ahead for same period. . . . Newsprint production in North America, first 9 months, hit record of 6,530,035 tons, 6.2% above same period 1959. U.S. production is up 4.8%, Canadian, up 6.6%. . . .

INDUSTRIAL PRODUCTION WILL RISE early in 1961 predicts Econometric Institute at Fibre Box Assn. annual meeting. Consumer prices will rise 2 to 3% and profits are expected to continue 1960 fourth quarter increase throughout 1961 in response to expected rebound in industrial production and rising prices for finished goods.

CANADIAN PULP OUTPUT GAINS . . . in September and first nine months, 1960. Says CPPA: gain results from both increased exports and domestic newsprint and paper-board production. September output was 932,613 tons, compared to 881,673 a year ago. Nine-month productions: 8,316,470 tons, as against 7,835,496.

SHIPMENTS OF CORRUGATED BOXES, Jan. 1 to Oct. 1, were 81.6 billion sq. ft., off 1.6% from 1959 which was up 13% above 1958. Not bad, says Fibre Box Assn. . . .

WORLD SALES OF PULP ARE LIVELY, reports the Assn. of Pulp Consumers. Shipments for first 8 months of market chemical pulp were up 14.6%, about 636,400 tons jump. European purchases sparking this increase. Kraft grades accounted were 70% of the increase in the four major purchasing nations (U.K., W. Germany, France and Italy). U.K. consumers bought 54% of the total increase, 52% of additional bleached kraft and 65% of rise in unbleached kraft. Says Pulp Consumers, these four nations accounted for 66% of total world increase in market pulp purchases.

NEW ECONOMICAL BOXBOARD is designed to mask oils and stains, which penetrate outer surface of package from within, is brainchild of Weyerhaeuser Co. The new silver-coated paperboard uses aluminum pigment to provide smooth, satin outer surface. Product also has excellent printability, good bending. Applications: low cost gift packaging and packaging of oily or greasy products.

MORE HOPSCOTCHING. . . . Marathon division of American Can Co. will build a food package manufacturing plant at Chambersburg, Pa., will mark its furthest penetration towards East, East Central and Atlantic Coast food processing and population centers. Products will be plain and printed paperboard packages for frozen foods, dairy products, baked goods, meats, margarines, lards and shortenings. Designed for continuous flow, the plant will produce letterpress and lithographic printing in five colors; also included will be equipment for protective coatings and for fabricating printed and unprinted paperboard into finished packages. Paperboard will come from the Naheola, Ala., pulp and paper mill. . . . Riegel Paper Corp. is now making a silicone coated kraft which they claim will not stick to tacky rubber, pitch, asphalt, plastic compounds, etc., and is durable enough for multiple-reuse in many rubber processing applications. It's called Strip-Ease. . . .

A PRACTICAL, STEP-BY-STEP PROGRAM FOR INCREASING PAPER MILL EFFICIENCY AND PRODUCT QUALITY

Lurking behind every ton of paper produced today are the problems of rising costs which threaten profits. The paper industry sees an increase in production of over a million tons per year for the next 10 years. If production objectives are to meet market objectives, greater mechanization heads the action list . . . to raise efficiency, emphasize quality control, insure a better profit picture.

Westinghouse Progressive Automation is a step-bystep program to help you achieve a greater measure of automatic production. Progressive Automation is thoroughly practical. Applied to an individual mill, it is an individual plan. Thus, you can reach your goals economically, without over- or under-automating.

Today, Westinghouse is ready to help you plan and execute the next step in a program for automatic production. For many, this will be data logging . . . automatic recording and tape storage, at any preset interval, of information from hundreds of points in the mill. Fast. Errorless. A centralized data center observes functions throughout the plant, so you can make accurate and timely decisions on quality control.

What lies beyond? The Westinghouse computer control system with the ability to handle dozens of varia-

bles in a comprehensive program. On-line computers receive data from sensing devices, make computations from process equations, control the process.

Progressive Automation has already proved itself with many manufacturers by stepping up production, improving quality, reducing off-grade losses and human error. One of the many rewards realized from automated equipment is more—and better control of—knowledge, both for present paper products and processes and for future product development.

Westinghouse Progressive Automation is flexible and therefore your capital investment is at a minimum. Controls and systems, appropriate to the stage of automation presently achieved in your mill, can be added as needed.

Westinghouse can help you work out a long-range plan of progressive automation . . . and is prepared to recommend, furnish, install and maintain all equipment to fulfill that plan. Today, and for the first time, there is one source for controls, computer systems and all other basic electrical equipment for paper mills. Transformers, switchgear, motors, gearing, drives. Westinghouse ready to offer you automation, step by step, economically . . . and will assume complete responsibility for system coordination. Call your Westinghouse representative for complete information.

WESTINGHOUSE PROGRESSIVE AUTOMATION CAN HELP YOU POWER-UP FOR PROFIT ... ELECTRICALLY

WESTINGHOUSE PROGRESSIVE

WESTINGHOUSE PROGRESSIVE



PUGET PULP

hen it must be UNIFORM

Operating floor of Puget Pulp's digesters



start with PUGET PULP...
...the uniformly strong, clean, white
chlorine dioxide bleached
softwood sulphite

PUGET SOUND PULP & TIMBER CO

Well, you could have knocked me over with a feather . . .

NEWSPRINT UPGRADED TO THE QUALITY OF FINE PACKAGING AND PRINTING PAPER WITH AN ANATASE GRADE OF TITANIUM DIOXIDE!

It's a new Glidden product especially made for paper coating

GLIDDEN ZOPAQUE[®]

SEE OTHER SIDE FOR MORE INFORMATION .

GLIDDEN ZOPAQUE

SEE SAMPLE ON OTHER SIDE OF THIS NEWSPRINT PAGE...

an anatase grade of titanium dioxide made especially for the paper industry ... combining the best features of anatase and rutile grades for paper coating

NOW, the better brightness of anatase TiO_2 is combined with the ease of dispersion and low viscosity features of rutile grades... in Glidden ZOPAQUE LD-C.

LD-C has properties comparable to rutile. It is equally well suited for on and off machine, size press and calender coating. Compatible with all other common paper coating pigments and adhesives.

Being an anatase grade, new LD-C is for coating all nonwaxing plain and printed paper and board. And LD-C is priced as an anatase. Some users are obtaining savings of up to $2\mathfrak{E}$ per pound.

Higher machine speeds, heavier coating weights and other advantages are inherent in new LD-C. To get the full story, or samples, call your Glidden representative or our Baltimore headquarters.



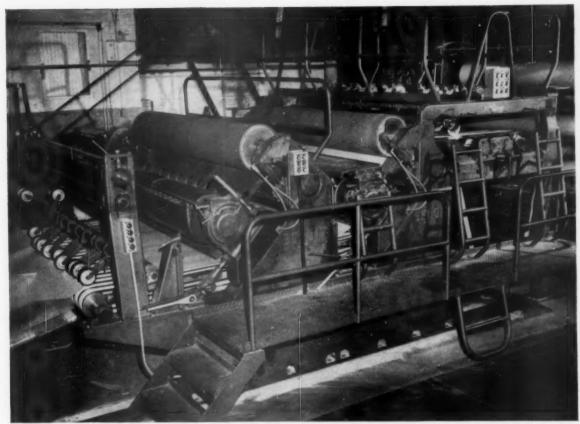
THE GLIDDEN COMPANY

FINEST PIGMENTS FOR INDUSTRY

Chemicals Division • Pigments and Color Department
Baltimore 26, Maryland

many GLIDDEN TECHNICAL FACILITIES ARE AT YOUR SERVICE for development or testing work in paper. Write for this new brochure—just off the press—Paper Research and Development Laboratories.





Packaging Corporation of America, Central Fibre Products Division., Hutchinson, Kansas

New Beloit Duplex Cutter and Slitter

The cutter pictured above is a completely new Beloit design. You will find that its thoroughly proven components, rugged and dependable, contribute to new high standards of production efficiency. Outstanding features are listed at right.

Look to Beloit Eastern Corporation to furnish you with the finest in finished product processing equipment:

 $\label{thm:winders} \begin{tabular}{ll} Winders \cdot Reclaim Winders \cdot Cutters \cdot Slitters \cdot Supercalenders \cdot Roll Wrappers \cdot Roll Lowering Tables \cdot Roll and Shaft Handling Equipment \cdot Conveyors \cdot Unwind Stands and Tru-Tension Controls \cdot and Other Equipment for the Paper and Allied Industries \\ \end{tabular}$

- Improved fly knife and bed knife assembly assure accuracy of sheet length and squareness of cut. Draw control between nip rolls maintains stable operation.
- Individually air-actuated slitters mounted on a common shaft. Each slitter assembly is designed with a preset toe-in and offset for minimum operator attention and maximum blade life.
- Cutter knife assemblies are symmetrical, permitting adaptation to a simplex, duplex, or even a triplex arrangement.
- Controls are logically placed for convenience of the operator.



BELOIT EASTERN CORPORATION

DOWNINGTOWN, PENNSYLVANIA

Member Beloit Group

PULP & PAPER - December 1960

FROM DESIGN to Fabrication and Erection



offers complete 4 point DIGESTER SERVICE

Profit from pulp takes more than a mill and men to run it. The same will be true of the next digester you

That's why CB&I offers a complete and expertly coordinated 4 point digester service. Our facilities to (1) design, (2) engineer, (3) fabricate and (4) erect are duplicated by few, if any other, sources.

Complete stress-relieving facilities are maintained at each CB&I plant. And CB&I crews are fully equipped and experienced for field stress-relieving. Partial or full X-ray and magnetic particle examination of structures in shop or field is available to meet all code or customer requirements.

Hortonclad®, CB&I's exclusive, vacuum bonding process can provide digester cladding of integral, continuous bond having exceptional strength and corrosion resistance.

These are but a few of the reasons why CB&I digesters and pulp plant equipment are selected for the most rigid requirements. And, why CB&I services offer an exceptionally high degree of quality control between shop and field. A bulletin on CB&I Pulp and Paper Structures and our Field Services bulletin will provide more details. Write our nearest office for your copies.



PP-25



Chicago Bridge & Iron Company

Atlanta * Birmingham * Besten * Chicago * Cleveland * Detroit * Houston * Kansas City (Mo.)

New Orleans * New York * Philodelphia * Pittsburgh * Salt Lake City

San Francisce * Saattle * South Pasadena * Tulsa Plants in Birmingham, Chicago, Salt Lake City, GREENVILLE, PA. and at NEW CASTLE, DELAWARE. In Canada: HORTON STEEL WORKS LTD., TORONTO, ONTARIO

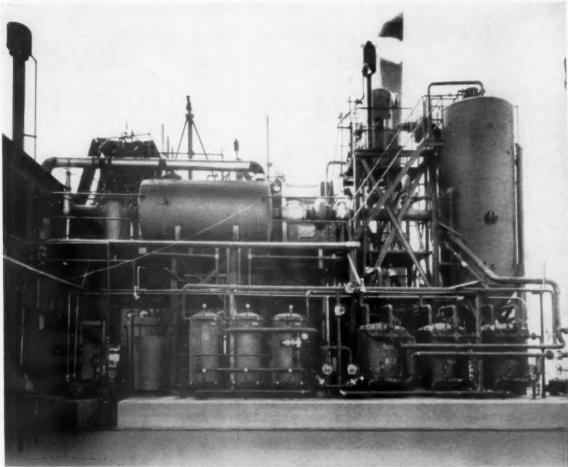
Top left: 40-ft. long digester designed for working pressure of 150 lbs. per sq. in. leaves our Birmingham plant where it was X-rayed and stress-relieved.

Middle: Digester leaves CB&I stress-relieving furnace at our Birmingham plant. Furnace can handle vessels up to 13-ft. diam. by 79-ft. long in one heat.

Below: 60-ft. high digesters erected, stress-relieved and seam welds X-rayed in the field by CB&I at Weyerhauser's 400-ton sulphite pulp mill at Cosmopolis, Washington.

ALLIS-CHALMERS





6000-gph hot lime-hot zeolite water-treating system and deaerator installed at a large West Coast industrial plant.

Hot process - hot zeolite system

eliminates boiler sludge and scale

Zero hardness in the effluent — result of Allis-Chalmers highly effective hot process-hot zeolite system — means scale and sludge-free operation of your boilers, economizers, feedlines, feed pumps and feedwater heaters.

In addition to zero hardness, the low alkalinity, silica and solids, and high pH of the effluent make the combined hot process and zeolite systems suitable for makeup to boiler cycles operating at pressures as high as 900 psig.

Your nearby A-C water conditioning engineer can give you further system details or arrange for a proposal or water analysis. Allis-Chalmers, Water Conditioning Department, Milwaukee 1, Wisconsin.



One source for all water conditioning facts, chemicals, equipment, service! Write for free hot process-hot zeolite bulletin 28X7559 . . zeolite water softener bulletin 28B7107A . . . and deserator bulletin 28B8853.

Modern Aloyco casting operations pay off for customers!

As the world's leading specialist in the manufacture of Stainless Steel Valves, Aloyco constantly seeks new techniques, new equipment and new ideas for improving product uniformity and quality. Close integration between sales, engineering, foundry and all phases of manufacturing result in better control of quality, prompt deliveries, and more flexible customer service.

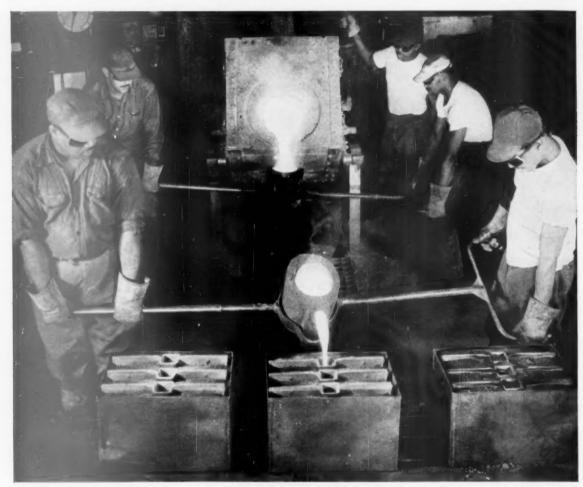
Aloyco combines over 30 years of specialized experience with the most advanced equipment for putting that experience to work on your corrosion problems. Technically qualified Aloyco men are available throughout the country to help you. Alloy Steel Products Co., Inc., 1316 West Elizabeth Ave., Linden, N.J.



ALLOY STEEL PRODUCTS COMPANY

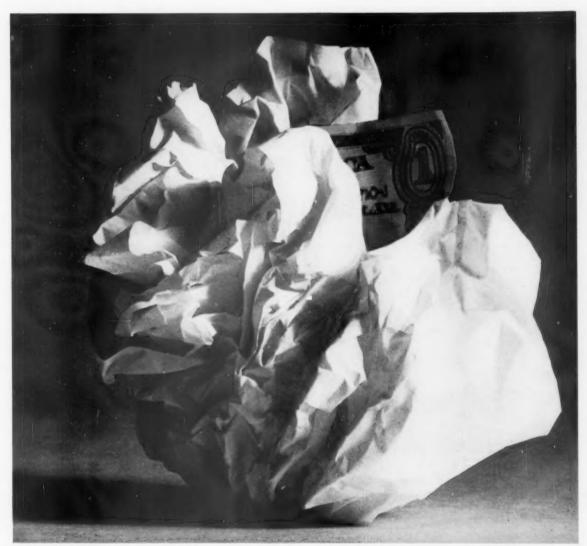
Boston « New York « Wilmington « Atlanta » Birmingham » Baton Rouge » Buffalo » Pittsburgh » Chicago » St. Louis » San Francisco » Los Angeles » Seattle





Part of Aloyco's foundry facilities include modern shell moulding techniques which permit unusually high dimensional accuracy. Radiographic

inspection and dye penetrant testing are part of a comprehensive and rigid control program that assures castings of highest quality and uniformity.



when the efficiency of the size has not been fully realized. Time and money are also wasted. Don't let your mill face these losses. Consider Cyanamid's high quality rosin sizes — fortified and unfortified, liquid and dry — for dependable, cost-saving performance. And in back of Cyanamid's high quality rosin sizes are those

Cyanamid's extensive manufacturing and research facilities, and the skilled personnel who man them. Your Cyanamid salesman, with his technical training and paper-making knowledge, is truly your partner in paper progress. Ask him to give you complete information about Cyanamid's high quality rosin sizes.

CYANAMID



HOW SOUTHWORTH'S DOUBLE SCISSOR*

Cut Handling Time

at CROCKER, BURBANK



2. Load is lowered to start first tier.



3. Roll in position for second tier.

Stacking 100 lb. rolls in three tiers on shipping pallets at Crocker, Burbank was formerly a job requiring four men. Now two men do it, with less effort, in half the time. Note in the picture sequence how Southworth's Double Scissor Lift Table completely eliminates the back-breaking strain of manual hoisting and positioning . . . another instance in which Southworth engineering has radically reduced materials handling costs, as well as minimized its accident hazards.

Photos courtesy Crocker, Burbank & Co.





el ift Table Dateste Pendin

SOUTHWORTH MACHINE CO. 1228 Warren Ave., Pertland, Me.

Southworth Systems

Paper Conditioners; Automatic Carton Sealer; Lift Tables; Air-Lift Tables; Cutters; Deliveries; Layboys; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabbing Knives; Corner Cutters; Custom Built Allied Equipment.



LEASE...RENT...or BUY

Your Material Handling Equipment

Towmotor Corporation and its subsidiary Gerlinger Carrier Company offer you three simple ways to improve your material handling operations . . . realize immediate savings . . . and accomplish this with little cash outlay.

- You can put Towmotor-Gerlinger material handling equipment—fork lift trucks and material carriers—to work on a continuous round-the-clock basis through the Lease-A-Truck Plan. No down payment—no working capital tied up—just a small monthly charge.
- You may also rent Towmotor-Gerlinger equipment on a short-term basis—as peak or seasonal demands require. You will start lowering handling costs immediately.
- 3. You can own new Towmotor-Gerlinger equipment by making reasonable monthly payments through the Towmotor-Gerlinger Time Payment Plan. Low interest rates make it easy.

Complete factory supervised maintenance can be included in any of the above plans.

You'll find Towmotor-Gerlinger handling economies consistently pay the small monthly cost many times over. For complete information on any of these profitable, money saving plans, write or contact Towmotor-Gerlinger Rental Division, Towmotor Corporation, Cleveland, Ohio.



FORK LIFT TRUCKS, CARRIERS AND TRACTORS SINCE 1919

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation



Now that John Inglis Co. Limited has acquired the paper machinery patents and assets of the Pusey and Jones Corporation, Inglis modern plants have become the new home of the machines and parts which have given papermakers the lead in today's race against production demands for quality and quantity.

Inglis will continue to improve and develop those features of design and manufacture for which the name Pusey and Jones is known, as well as Inglis' own designs.

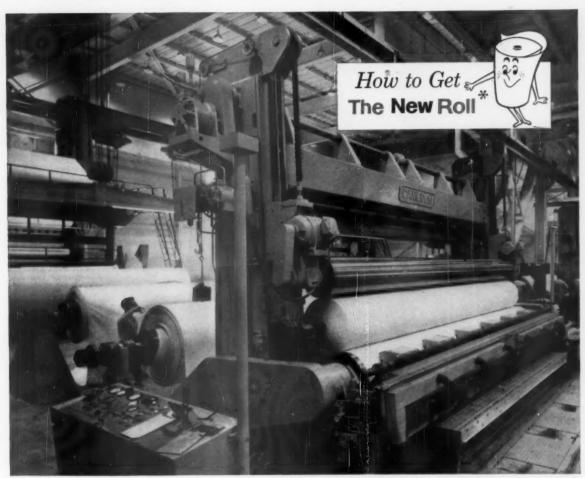
Inglis is ready today to supply technical advice, new machines or parts, and to provide full service to existing Pusey and Jones machines anywhere in the world.



JOHN INGLIS CO. LIMITED PAPER MACHINERY DIVISION

14 STRACHAN AVENUE . TORONTO, CANADA

X13



CAMERON IMPERIAL WINDER serving with a high speed supercalender at the St. Francisville (La.) mill owned jointly by Crown Zelle bach and Time Inc.

*the finished roll of superb new quality!

It is sometimes expedient to purchase a winder as part of a mill or finishing room "package" installation. Even so, there is no reason to wind up with less than the superb quality of *The New Roll!* A Cameron integrated winding system, job-fitted by Cameron specialists, may be purchased for use with any paper machine of any make, or with any coating or calendering machine. *And that's the only way to get The New Roll!*

In the action photograph above a new Cameron Imperial winding system, integrated from unwind to rewind, (246" trim width, 72" rewind capacity) is runing at speeds up to 5000 fpm* on 28 to 85 lb. coated book papers. Here are

some of the features of this job-fitted Cameron system:

Roll control starts with a Cameron H3PMR continuous duty unwind brake responding to signals from a Cameron cam controlled adjustable automatic tension sensing system. Easy setups with tight starts and firmly set cores are assured by such features as the Cameron hydraulic riding roll lift, and hydraulic down-pressure control. Other features which contribute to superb roll quality are the riding roll driven at both ends for even torque distribution, differential speed rewind drums which play a star role in Cameron automatic roll density control, and the Cameron isolated gear

box which drowns main drive vibration. Minimizing downtime and contributing to high productivity are such features as the Cameron automatic shaft injector, the Cameron hydraulic roll lowering table with Cameron automatic shaft puller and core loader, the air-operated Cameron Quick-set shear cut slitters, and the centralized control panel.

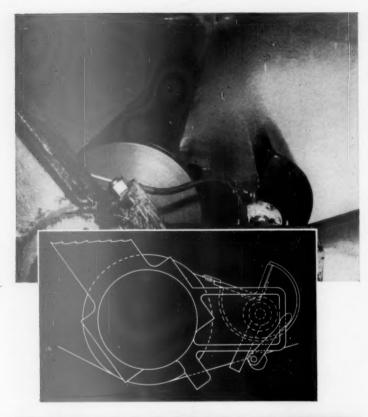
We invite you to visit the unique Cameron Research and Development Service at Dover, N. J. See the operation of your own job-fitted "pilot" system, perfectly integrated from unwind to rewind, and engineered by specialists to meet your precise requirements.

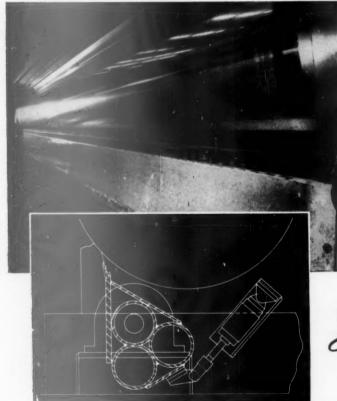
*Speed of Cameron Imperial is rated in excess of 8000 fpm depending upon machine width, number of cuts, tension, and characteristics of material.

CAMERON
a team of specialists

54 YEARS devoted to the design and manufacture of slitting, roll winding, unwind and web control equipment.

Cameron Machine Company, Franklin Road, Dover, N. J.
Canada: Cameron Machine Co. of Canada, Ltd., 14 Strachan Ave., Toronto, Ont.
France: Cameron Europe S/A, 5 Rue de Prony, Paris (17e) France
Brazil: Cameron Maquinas Ltda., Rua 24 de Maio, 104-5°, Sao Paulo, Brasil
famous TIDLAND pneumatic shafts are sold exclusively through Cameron





The World's Largest Paper Machine is Doctored by Lodding

PROPER DOCTORING of paper machine rolls results from long experience in specialization. For this there is no substitute. And, as doctors are precision tools, each installation must be custom-engineered and skillfully made. Proper doctoring doesn't just happen. It's planned.

That is why most progressive mills and machine builders come to Lodding for their doctoring needs. That is why Lodding has yet to fail in any doctoring assignment.

When the Great Lakes Paper Company installed a 342-inch newsprint machine at Fort William, Ontario it was doctored by Lodding. This longer face width presented a challenging problem.

The Black-Clawson Company, builders of this machine, turned to Lodding for the solution. With the necessary design modifications, doctors were designed and built that today are providing hydraulically oscillating, uniform blade loading over a 342-inch span.

When you need good doctors for proper roll doctoring, you can rely on Lodding's specialized experience. Satisfaction is guaranteed.

Call, write, or wire for the benefits of this specialized technical service.

Engineering Corporation



HOW A FALK EQUI-POISED MOTOR MOUNT REDUCES BEARING LOADS ON A DRIVEN MACHINE

GIVEN

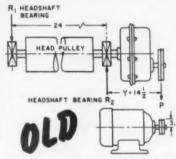
Actor—15 hp, 1750 rpm, Frame 284U, Weight—320 lb. Sheave diameters—6.6/9.4

Driven machine—belt conveyor with 24" center distance between headshaft bearings.

NOTE:

Weights of 307J24 Shaft Mounted Drive, sheaves, and V-belts are eliminated from calculations because they remain constant; do not affect the comparison.

WITHOUT FALK MOTOR MOUNT



Torque at motor shaft = 63,025x15 hp=540 lb-in.
1750 rpm

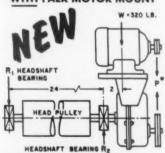
Belt pull (P)=540 lb-in. x 1.5 Load Connection 3.3" Factor

R₂=246 lb x (24" + 14.5")=395 lb

R₁=246 lb x 14.5"=149 lb

(Check: 395 lb-149 lb=246 lb)

WITH FALK MOTOR MOUNT



V-belt pull has zero reaction on headshaft bear-

R₂=320 lb x (24" + 2")=347 lb

R₁=320 lb x 2"=27 lb

(Check: 347 lb-27 lb=320 lb)



rigid, all-steel weldment, pre-drilled for bolting standard NEMA foot-mounted motor (1/2 to 30 hp) directly to the steel frame of Falk Shaft Mounted, Flange Mounted and Screw Conveyor Drives. With it, motor can be mounted in almost any position around perimeter of reducer.

(Balancing of forces.)

Substantial Savings for You

It saves engineering time required to design special motor bases and foundations...saves cost of labor and materials required to build special motor foundations...and saves on equipment costs by using a quality stock component. Further, its quick installation and easy maintenance mean added cost savings. The Motor Mount is a space saver, too. Where restricted space is a factor, ability to mount motor in any of several positions is an important convenience...For information on range of sizes, dimensions, etc., contact your Falk Representative or Distributor—or write direct for Bulletin 7100.

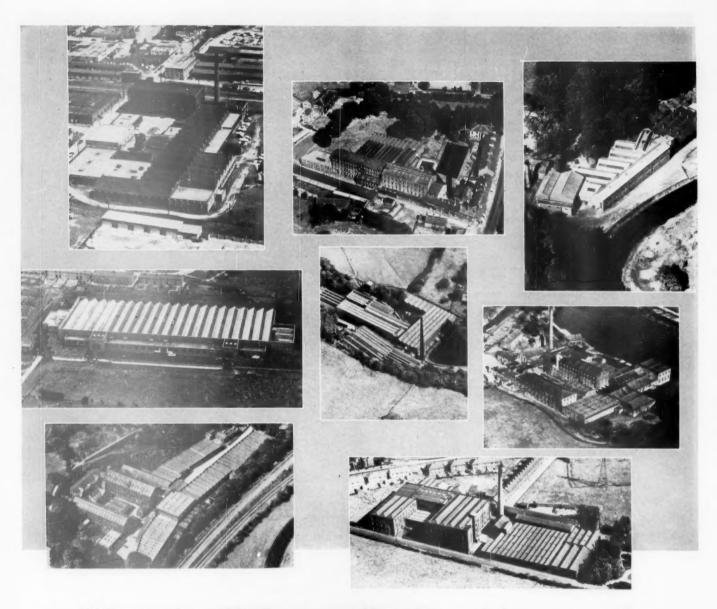
THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS



Representatives and Distributors in most principal cities

FALK is a registered trademark



What do all these mills abroad have to do with the Waterbury felts you buy?

These are the English and Canadian mills of the Porritts & Spencer Group, the largest source of mechanical cloths in the world today. Waterbury felts are still produced in the mill at Skaneateles Falls, N. Y. as they have been for over half a century. Yet these English and Canadian mills are destined to be of great importance to you.

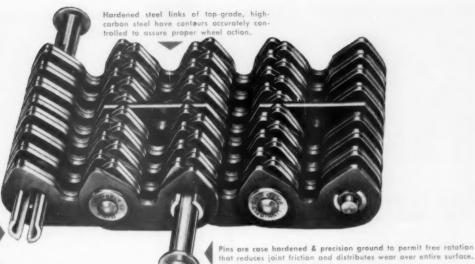
Why? Because Waterbury felts now benefit from the vast technical skills of the Porritts & Spencer group, with its 152 years of experience in every type of mill in every climate the world over. P & S laboratory facilities and P & S manufacturing techniques are being devoted now to the improvement of Waterbury's already high quality.

The benefits of this new association are apparent in the current production of Waterbury felts. Ask your Waterbury representative to tell you how they can play a vital part in keeping your quality up and your costs down.

THE WATERBURY FELT CO., INC. Skaneateles Falls, N.Y.

A Member of the PORRITTS & SPENCER Group





Bushings of spe-cially selected steel are case hardened to take joint wear and prevent elon-gation of link hole.

The teeth in Link-Belt silent chain put the bite on drive

costs

hat reduces joint friction and distributes wear over entire surface.

Compact, positive-contact design reduces entire unit expense

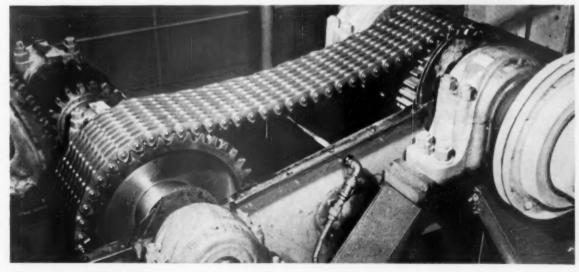
There are big savings to be found by switching to modern, versatile Link-Belt silent chain drives. Smooth, positive engagement prevents slippage, eliminating wasted horsepower. Long life—continuous operation with minimum maintenance for many years is common-keeps production costs down.

Now consider these additional advantages: dependable operation under extremes of temperature and humidity; easy assembly in tight spaces, permitting built-in drives, compact housings; space saving and efficiency on extremely short centers at ratios as high as 10-to-1.

Link-Belt silent chain is available in a full range of types and sizes for either large or fractional-horsepower drives. For full details, call your nearby Link-Belt office or authorized stock-carrying distributor. Look under CHAINS in the yellow pages of your phone book. Ask for Book 2425.



LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago I. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney): Brazil. Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World.



PULP & PAPER - December 1960

The warning that comes too late!

WHEN THIS HAPPENS, it's already too late. Lubricant has leaked out, and dirt or grit have probably damaged your bearings and shaft.

You can avoid sealing problems by using Johns-Manville Clipper Seals because you can count on them to outlast time between regular overhauls. They seal efficiently . . . give better protection. That's why Clipper Seals are selected as original equipment by many automotive, marine and aviation manufacturers.



JOHNS-MANVILLE PRODUCES a wide range of sizes and lip designs—including Split Clipper Seals for quick, temporary replacement—in compounds that will resist every heat, speed or corrosive condition. It is smart maintenance practice to use Clipper Seals, and to keep on hand a small replacement stock of the sizes and designs you need regularly.

Let your J-M Distributor help you select the Clipper Seals that are compounded to meet your exact sealing requirements. Or write to Johns-Manville, Box 14, New York 16, N. Y. In Canada: Port Credit, Ontario.

JOHNS-MANVILLE CLIPPER SEALS





COMPLETED BRANDON FELTS AWAITING SHIPMENT

"Brandon makes all, large to small"

Brandon custom-weaves dryer felts for paper machines of all sizes... for all paper grades. Whether you are producing kraft, newsprint or fine papers, you get every advantage of Brandon's research and experience in dryer felt design and craftsmanship... advantages that result in greater production and more profits for you.

Let your Brandon Man demonstrate how

trouble-free your drying operation can be. Call him today.

BRANDON SALES, INC.
BRANWOOD STATION, GREENVILLE, S. C.



REPRESENTATIVES: Northern and New England States: ORTON CORP., FITCHBURG, MASS. Midwestern States: L. J. MEYERS, KALAMAZOO, MICH. West Coast: M. J. MAGUIRE, PORTLAND, ORE. Southern States: CLYDE H. WHITE, GREENVILLE, S. C.



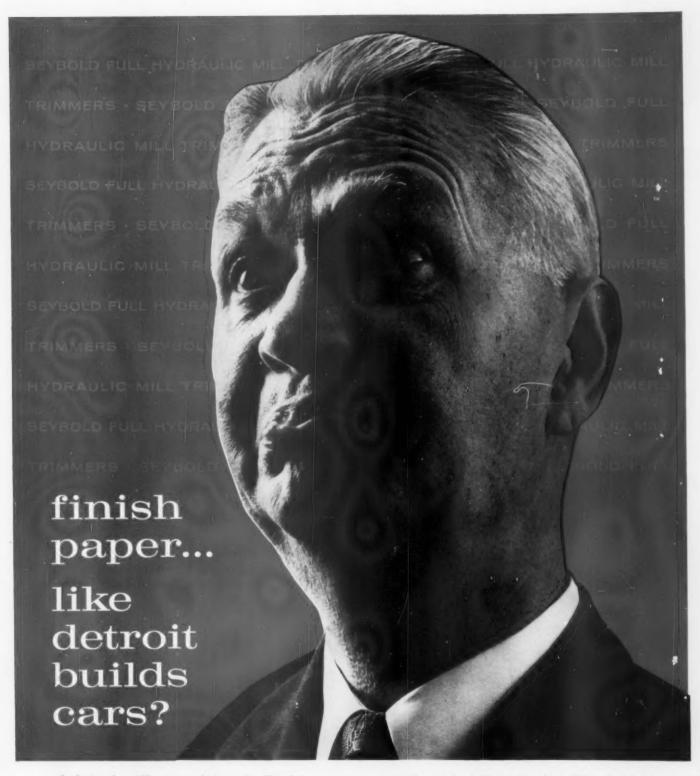
Here is another FelkerWeld Freeflow product! The six port header above illustrates the advantages of FelkerWeld Flared Port design. For your protection we furnish only .03 max carbon stainless steels, properly welded with extra low carbon stainless steel wire, either semi-automatic, full-automatic or metallic-ARC depending on the application. Why chance the possibility of reduced corrosion resistance?

The close up view shows the weld at the juncture of the port to the body at a point accessible for good clean-up on the inside during fabrication. The port is actually flared from the body of the header... resulting in a cleaner inner surface which will not cause hang-up of stock. Write for complete details.



FELKER BROS.

MANUFACTURING CO. MARSHFIELD, WISCONSIN



A lot of mills are doing it. Right now. With mechanization. They're streamlining material flow. Using air-film tables, for instance... conveyors, lifts and Seybold Full Hydraulic 65," 85" and 100" mill trim-

mers—the only full hydraulics. They're cutting costs—boosting tonnage. The figures are fantastic. So much so, you'll never believe them if we quote them. So join us on a plant tour...write today.



HARRIS-SEYBOLD A Division of Harris-Intertype Corporation
4538 East 71st Street, Cleveland 5, Ohio





business

LL OF BUCKEYE's energies, talent and resources are directed toward producing finest quality pulps. Skilled, experienced hands are busy from the very beginning . . . cultivating vigorous, strongfibered pine seedlings on our 800,000-acre tree farm at Foley, Florida . . . selecting the best pulpwood for processing . . . establishing and adhering to the most exacting quality standards and controls. From start to finish, Buckeye employs scientificallyproven methods and equipment, including a unique double-screening system and special 8-stage bleaching process to assure new levels of cleanliness and brightness. As a result, Buckeye krafts have attained a world-wide reputation for dependability among leading papermakers. And the Buckeye name has become a symbol for service and quality.

We'd like to tell you more about our bleached krafts. Why not write us and ask for the new brochure on Buckeye pulps for the paper industry?

BUCKEYE CELLULOSE CORPORATION

Memphis, Tenn./Foley, Florida

BUCKEYE KRAFI

Also cotton linter pulp Chemically modified cotton linter pulp

BABCOCK & WILCOX EQUIPMENT FOR THE PULP AND PAPER INDUSTRY

FOR CHEMICAL RECOVERY · PROCESS STEAM · POWER

Through constant research and engineering, B&W offers pulp and paper manufacturers equipment and systems adopting the latest operating practices and production advancements.

Recovery units for the Kraft process are now operating at higher pressures and temperatures to more economically meet the pulp and paper mills' expanding electric power requirements.

MgO recovery* is opening new areas of economical sulfite pulp production with recovery of both heat and chemical values from magnesium bisulfite waste liquors.

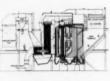
The recently introduced Magnefite pulping process* permits use of a wide variety of wood species and offers lower mill firstcosts, and lower pulp production costs.

Power boilers operate at a wide range of steam pressures and temperatures for improved performance in generation of electricity, and for process steam.

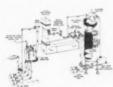
These are some of the more recent developments in the complete range of B&W equipment and processes that are the result of B&W's close relationship with the industry and its nceds. Call in the B&W man at your next stage of mill development planning. He'll talk B&W equipment in your language. The Babcock & Wilcox Company, Boiler Division, Barberton, Ohio.

*Exclusively available from

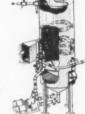
The Babcock & Wilcox Company.



Magnesium Bisulfite Recovery Boiler



Evaporator-Scrubber



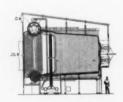
Cyclone Evaporator





Kraft Recovery Boiler

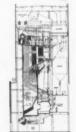
Type FM Package Power Boiler



PFI 400,000 lb hr Power Boiler



2-Drum Bark Burning Boiler



Radiant Boiler with Cyclone Furnace



Neutral Sulfite

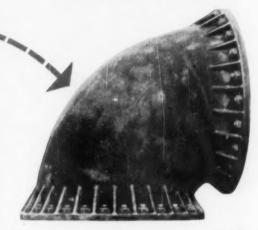
Recovery Boiler

THE BABCOCK & WILCOX COMPANY

BOILER DIVISION



ESCO Alloy 43H ELBOW



Gas in Weyerhaeuser Pulp Plant

Installed in 1945, this 30" ESCO Cast Alloy 43H elbow continues to give completely trouble-free service at Weyerhaeuser Timber Company's Sulphite Pulp Division at Everett, Washington.

Located between the sulphur burners and the cooling pond, the ESCO elbow casting handles corrosive sulphur dioxide gas at temperatures ranging from 1800° to 2000° F. This is one of two headers used alternately. Based on this successful performance, many other ESCO Alloy 43H castings have been installed in this operation.

ESCO's wide range of steel alloys and research facilities are solving many severe heat and corrosive problems for the pulp industry. ESCO also builds complete digester systems for pulp mill service.

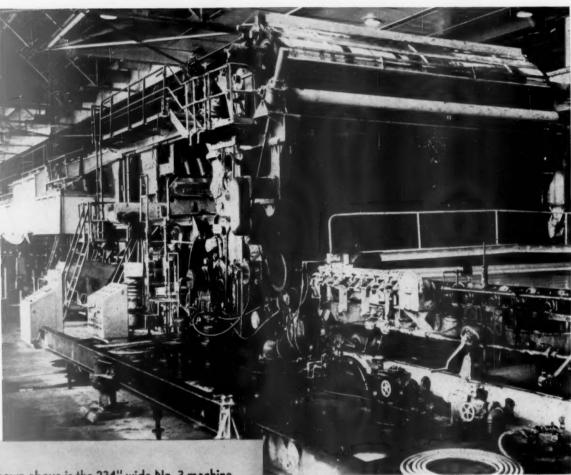
Call your ESCO representative for details. Ask him for your free copy of ESCO Catalog No. 175, "Alloy and Stainless Steels for the process and manufacturing industries," or write direct.

ELECTRIC STEEL FOUNDRY COMPANY

2167 N. W. 25TH AVE. PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Clies
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED



Huyck celebrates 40 Crown Zellerbach,



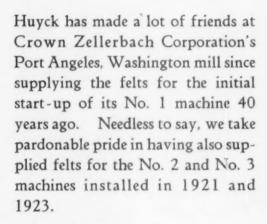
Shown above is the 234" wide No. 3 machine installed by Crown Zellerbach Corporation's Port Angeles, Washington mill in 1923. The 164" wide No. 2 machine was installed in 1921. A suction transfer press section was added to the No. 2 machine in 1953 and to the No. 3 machine in 1956. Both operate at 1,800 f.p.m. The 164" wide No. 1 machine, installed in 1920, runs at 1,400 f.p.m. without a suction transfer.



Huyck Felt Co.,
Rensselaer, N. Y.;
Aliceville, Ala.;
Division of Huyck Corporation.
In Canada: Kenwood Mills Limited,
Arnprior, Ontario.

years' service with Port Angeles

PORT ANGELES, WASHINGTON NEWSPRINT MILL HAS USED HUYCK FELTS SINCE 1920



This mill today produces over 500 tons of "Crown News" every 24 hours to help meet the requirements of more than 400 newspaper customers.

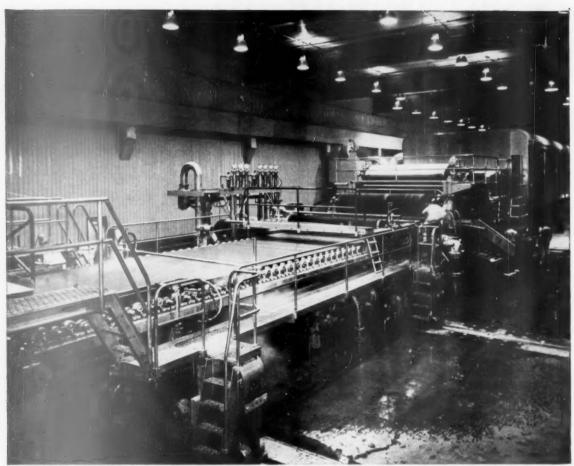
Our objective: to continue the same consistent service in future years.



Crown Zellerbach Corporation's Port Angeles Washington mill produces over 500 tons of "Crown News" every 24 hours to help meet the newsprint requirements of more than 400 newspapers.

HUYCK FELTS

+ INDUSTRIAL FARBLES



No. 1 Fine Paper Machine at the Island Paper Mills Division of MacMillan, Bloedel and Powell River Limited

Designed and built by
Dominion Engineering for
MacMillan, Bloedel and Powell River Limited,
this is the first Fine Paper Machine
to be installed in Western Canada.



PAPER DIVISION

OMINION ENGINEERING

COMPANY LIMITED

MONTREAL . TORONTO . VANCOUVER



Designed For Greater VERSATILITY! WOODBERRY 887

Asbestos Reinforced Dryer Felt

WOODBERRY 887 is a medium weight cotton dryer felt with asbestos yarns in the face. The asbestos reinforcement provides a higher margin of heatresistance than can ordinarily be obtained with all-cotton felts. Versatility is another outstanding quality of this reliable felt. Engineered to offer maximum drying and durability, it is ideally suited to a wide variety of drying applications... from the making of kraft to light paper toweling production. And no matter where you use it, you can count on the smooth face of WOODBERRY 887 to insure finer finished paper... just as you can depend on the high quality of cotton and asbestos composition to provide extended dryer felt life. These many positive advantages of WOODBERRY 887 promote increased production, longer runs with far less downtime. Available pre-stretched and pre-shrunk with or without clipper seams.

MOUNT VERNON DRYER FELT FAMILY—WOODBERRY 887 is just one of Mount Vernon's full "family" of scientifically designed dryer felts. There's an individual felt for virtually every paper machine position and every paper-making need.

UNIFORMITY Makes The Big Difference

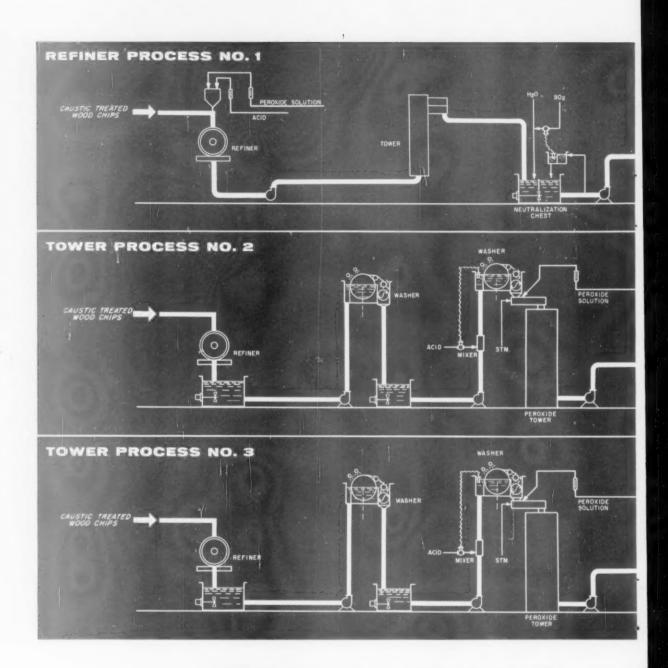
Mount Vernon Vills, inc.

DRYER FELT DIVISION

201 East Baltimore Street Baltimore 2, Maryland Telephone: SA 7-5845

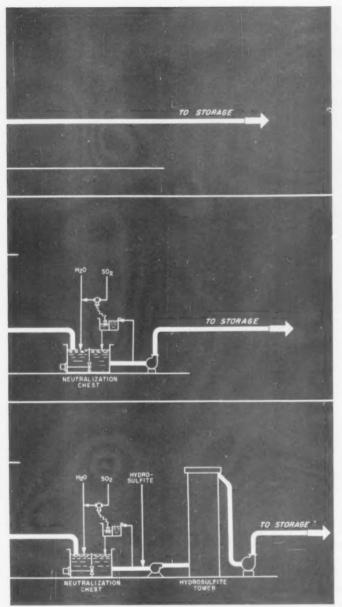
Another Mount Vernon Dryer Felt Success Story...

Mount Vernon engineers were consulted by a leading producer of heavy kraft in an effort to find a suitable felt for the second bottom position on their #1 machine. This machine runs at extremely high temperatures and at unusually high speeds in a punishing operation which shortens the life of ordinary dryer felts. Mount Vernon engineers agreed that WOODBERRY 887, asbestos reinforced dryer felt, would do the best job. Result—WOODBERRY 887 ran four-teen weeks versus a competitor's synthetic-cotton run of ten weeks. WOODBERRY 887 lasted as much as 40% longer—cost much less per ton of paper produced.



Which process is best for experience can help you make the right ...and save you thousands of dollars in

CALL ONE OF THESE MEN...LET HIM WORK WITH YOU IN MAKING THIS IMPORTANT DECISION:



Du Pont experience has helped many mills make the right choice between tower or refiner bleaching for cold caustic pulp based on brightness requirements. For example:

◆ 60 brightness. In process No. 1 at left, caustic-treated wood chips enter refiner and are bleached with "Albone" hydrogen peroxide and acid*. The use of acid controls the alkalinity of the bleaching reaction and assures maximum response from the hydrogen peroxide. Sulfur dioxide (SO₂) then neutralizes the bleached pulp and stabilizes the brightness obtained in the refiner. *Du Pont Patent Pending.

465 to **75** brightness. In process No. 2 at left, pulp is refined, washed to remove caustic solubles, acidified with sulfuric acid to remove acid solubles, washed, and bleached in a conventional peroxide tower to desired brightness in the 65 to 75 range.

∢70 to 80 brightness. In process No. 3 at left, pulp goes through the same steps as in process No. 2. Then pulp is neutralized, and bleaching is completed in a hydrosulfite tower for maximum brightness in the 70 to 80 range.

Electrochemicals Department, Peroxygen Products Division Wilmington 98, Delaware





SOLOZONE®

BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

bleaching cold caustic pulp? Du Pont choice between tower or refiner bleaching investment and chemical costs.

Midwest Area W. L. Liike, Chicago, Ill.—INdependence 3-7250

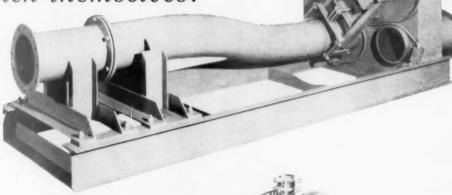
New York & Boston Area
C. R. Lombard, New York, N. Y .-- LOngacre 3-6440

West Coast Area
P. E. Kiefer, Portland, Oregon—CApital 7-1281
Southern Area
R. W. Hammond, Charlotte, N. C.—FRanklin 5-5561

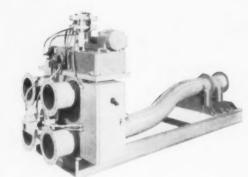
Or call: N. J. Stalter, Wilmington, Delaware-PRospect 4-4698



enable chip feed lines to switch themselves!



Rader hydraulically operated automatic valves provide a means of switching flow of chips through pneumatic lines by remote control, or by fully automatic regulation if desired. Upon actuation, the chip feeder stops and air blows line clean. Sleeve which holds offset pipe to valve port retracts. Sleeve hits limit switch, causing offset pipe to be rotated to correct port. At proper position, a second limit switch causes offset pipe to stop and sleeve to close, locking pipe to port. Photo at top shows automatic valve from switching side; photo at right, from discharge side.



AUTOMATIC VALVING WILL INCREASE PLANT EFFICIENCY... SAVE TIME AND MONEY

Rader Automatic Valves offer new flexibility and economy to the operator who wants to move chips or other bulk materials to two or more destinations, at his option.

For example, Rader automatic valves make it possible to keep four chip bins filled from a single source, without human attention. High and low-level indicators are placed in each bin; as one bin is emptied, the chip flow line is automatically switched to this bin, and when it is filled, the flow is shut off.

Or the feed line can be directed either to a digester or to outside storage. Remote control panels can be provided so the automatic valves can be controlled from any point in the plant.

The valves may have as many as 8 ports connected to discharge lines. Actual time required to disconnect and connect fully to the new line is less than 20 seconds, plus the brief time required to clear the first line after the feeder stops. Tolerances are highly accurate and closures tight, so there is slight pressure loss.

ALSO AVAILABLE:

Hydraulic operation; 2-port model
Air operation; 2-port model

Air operation; 3 or more ports

RADER PNEUMATICS, INC. 1739 N. E. 42nd AVENUE . PORTLAND, OREGON

BOSTON . EUREKA, CALIF. . LOCKPORT, ILL. . LOS ANGELES . MEMPHIS . SYRACUSE . VANCOUVER, B. C. . PEMBROKE, ONTARIO

Tile Tank Hi-Lo Pulper at Byron Weston Company SOLVES LOW HEADROOM PROBLEM



In January of 1960 Byron Weston came to Jones with a special pulping problem. To produce their high grade cotton fibre papers Byron Weston uses a wide variety of hard-to-defibre furnish. They needed a pulper that could handle this furnish efficiently, but . . . here was the problem . . . they also needed a pulper which could be installed in 10' headroom and still handle 35 tons per day.

Jones engineers solved both problems effectively with a specially designed tile tank Hi-Lo Pulper. It meets the limited headroom requirements without sacrificing the proven efficiency of the standard height stainless steel tank Hi-Lo.

Designed for batch or continuous pulping with low power consumption, the Jones Hi-Lo Pulper can be installed in areas where the headroom is as low as $6\frac{1}{2}$.



The low speed rotor, with large curved blades, provides quick breaking and maxi-

mum circulation, forcing stock across the tank to the high speed rotor for

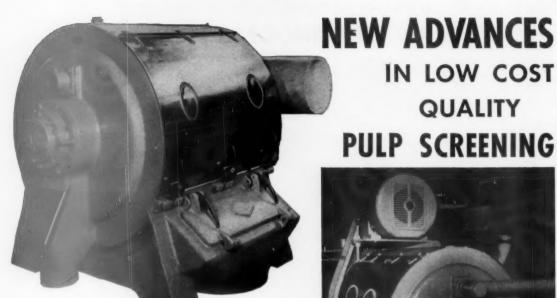
The notched blades of the high speed rotor, turning at a average tip speed of 7600° per minute, project only $\frac{1}{2}$ 6" and use power most efficiently for defibering. The blades, held securely by duroid wedges, can be easily replaced.

Canadian Associates:
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa



PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

PULP & PAPER - December 1960



IMPCO CENTRIFUGAL SCREENS FOR:

Washed Stock Screening Hot Stock Screening Sealed Black Liquor Knotting Fibre Length Classification **Paper Stock Cleaning**

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- a special stator which provides uniform internal distribution of pulp;
- a patented high-efficiency rotor which increases capacity without additional horsepower;*
- a bottom accepted stock outlet permitting all sub-floor piping;
- a full length quick-opening door for routine accepted stock sampling;
 - an accessible rejects outlet for tailings inspection
- or sampling.

These features are resulting in peak capacities and high discharge consistencies at lowest horsepowers. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

" U. S. Patent No. 2,845,848.

IMPROVED MACHINERY INC.

NASHUA, NEW HAMPSHIRE



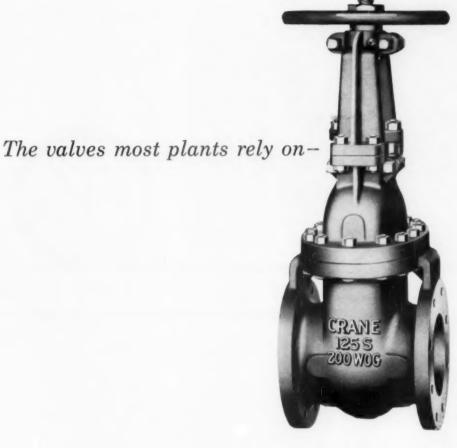




IN LOW COST

QUALITY

PULP SCREENING



No. 465½, 125-pound iron body gate, bronze trimmed. Sizes 2" to 48".

CRANE 125-POUND IRON BODY GATES

On general utility services . . . water mains and distribution lines . . . low-pressure steam and hot water . . . air and gas . . . more plants rely on Crane No. 465½ iron body bronze trimmed gates than on any other valve in this class.

Crane iron gates are an up-to-date design with service-proved features. A two-piece, ball-type packing gland for bind-proof packing adjustment . . .

shoulder-type seat rings that won't loosen ... extralong disc guides to minimize drag on seating faces. All features are carefully planned to yield long, dependable operating life.

To enable you to standardize on these economical, efficient valves, Crane builds them in a full range of sizes. Popular sizes are available from local stocks of your Crane Distributor.



Crane Co., Industrial Products Group, 4100 S. Kedzie Ave., Chicago 32, Illinois

VALVES . ELECTRONIC CONTROLS . PIPING . PLUMBING . HEATING . AIR CONDITIONING

PULP & PAPER - December 1960



PAPELERA PULPA-CUBA S.A., TRINIDAD, CUBA

This new integrated pulp and paper mill produces 100 tons per day of high grade bleached and unbleached papers from sugar cane bagasse fiber. Our Organization supplied this project with technical assistance and the major production equipment including a Horkel System for depithing and cleaning the raw bagasse, a Pandia Continuous Digester and the Black-Clawson four-drinier paper machine shown here.

Completely depithed bagasse fibers



NEW MILLS MAKING PAPER FROM BAGASSE AND STRAW



Wheat straw fibers

EMPAQUES DE CARTON TITAN S.A., MONTERREY, MEXICO

Under a package contract, we supplied principal equipment and start-up assistance for the recent expansion of this mill to produce 60 metric tons per day of unbleached wheat straw pulp for corrugating medium. Straw processing and pulping in a Pandia Continuous Digester is accomplished in this compact, semi-enclosed installation.

These Latin American projects are but two of the 25 pulp and paper mills throughout the world for which the Parsons & Whittemore-Lyddon Organization has provided full or partial planning, technical, economic, and construction services. Twelve different papermaking



fibers are utilized among these projects. We even supervise start-up and train local operating personnel, and can arrange for sale of the output on world markets. For literature and full information on how our services can benefit your mill projects, write our nearest office.

THE PARSONS & WHITTEMORE-LYDDON ORGANIZATION

World leaders in the development of pulp and paper mills for the use of local fibers

18-19 Savile Row, London W.1, England



5 Rue Jean Mermoz, Paris 8°, France

250 Park Avenue, New York 17, N.Y.



Nearly 40 years ago, Albany Felt research technicians started treating certain felts with chemicals to improve felt quality and increase the production of paper.

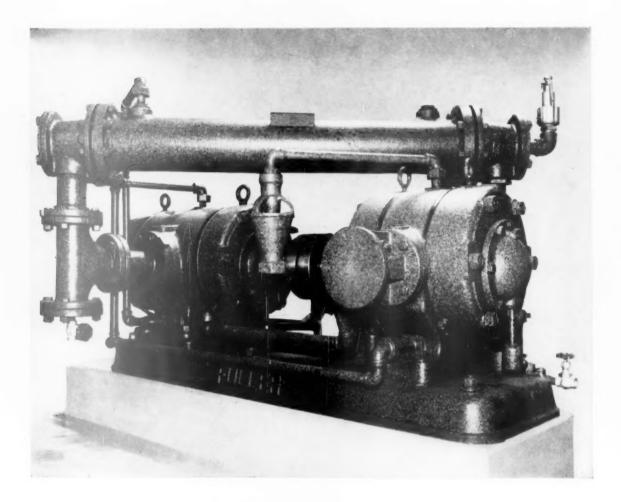
Chemical treatments are now providing faster start-ups, improving finish, eliminating bacteria, increasing drainage and prolonging felt life.

Could our chemical treatments help you?



N. Monmouth, Maine Hoosick Falls, N. Y. St. Stephen, S. C. Cowansville, Quebec Cuautitlan, Mexico

TALK IT OVER WITH YOUR ALBANY FELT SALES ENGINEER



Fuller Compressors With Overhead Intercoolers Offer A New Dimension In Compactness

Fuller Rotary Two-Stage Compressors equipped with Overhead Intercoolers fill the bill where space may be a problem. These compressors produce from 30 to 3300 cfm, pressures to 125 lb. gage and can be readily installed.

These compact Rotary Compressors are vibration-free, thereby eliminating the need for involved and expensive foundations or structural modifications.

The Fuller rotary principle permits complete freedom of reciprocating parts—valves, crankshafts, pistons—cutting the need for frequent servicing and parts replacement. Minor maintenance is all the care indicated for years of serviceability.

For full details on the maintenance-free economy and high performance of Fuller rotaries, write today for comprehensive, illustrated Bulletin C-5A.

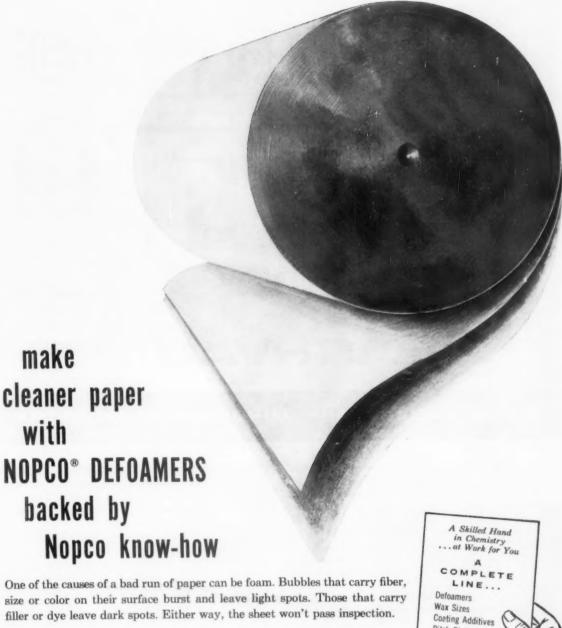


FULLER COMPANY

128 Bridge St., Catasauqua, Pa.

Bubsidiary of General American Transportation Corporation
Offices in Principal Cities Throughout the World





size or color on their surface burst and leave light spots. Those that carry filler or dye leave dark spots. Either way, the sheet won't pass inspection.

Many variables contribute to foam formation. Since each mill has its own distinct foaming problems-because of differences in equipment, type of water, chemicals used and running speeds-it takes a wide range of defoamers to meet them all. Let your Nopco specialist work with you to develop the best system for your conditions. Write for specific information and for literature.

Pitch Dispersants Metallic Soaps Rag Cooking Surfactants Felt Washing Detergents Calender Stack Lubricants Antiblocking Agents **Dewaxing Agents**

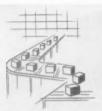
Polyethylene Emulsions



NOPCO CHEMICAL COMPANY

60 Park Place, Newark, N.J.

Plants: Harrison, N.J. • Richmond, Calif. • Cedartown, Ga. • London, Canada • Mexico • France Manufacturing Licensees Throughout the World



Food Processing



Chemical Industry



Petroleum Industry



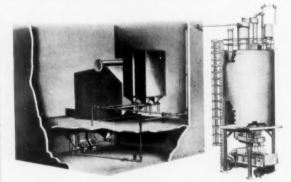
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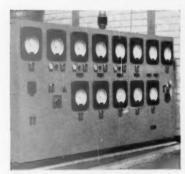
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Pulp stocks, chemicals, no liquid is too tough for the



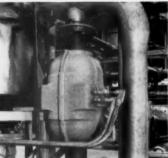
Crown-Zellerbach Antioch, Calif. uses Foxboro Magnetic Meters for blending fir and hemlock stocks. Rugged meters are installed outdoors — need no protective housing.



Foxboro Dynalog recorders give operators continuous chart records of the Magnetic Meters linear output. Like the flow meter, Dynalog recorders seldom require maintenance.



St. Regis Paper Company, Jacksonville, Florida. St. Regis uses 5 Foxboro Magnetic Flow Meters in its stock refining system. Meters are 6" in diameter. System was installed in 1956.



Riegel Paper Corporation, Acme, North Carolina. Riegel has several Magnetic Meters in its mill. The 8" meter shown above measures broke flow in their pulp stock blending control system.

additives, dyes... Foxboro Magnetic Flow Meter



hundreds of successful installations reported by America's leading mills

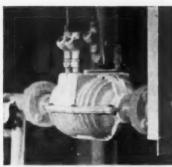
Introduced six years ago, the Foxboro Magnetic Flow Meter has proved its superiority for measuring the toughest pulp and paper mill liquids. Pulp stocks, mud slurries, starch, liquors all flow right through the meter without plugging up.

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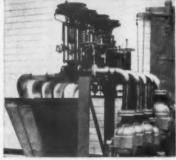
Foxboro Magnetic Flow Meters have solved some of the paper industry's toughest measurement problems. Ask your Foxboro field engineer to show how it can help with yours. Or write for Bulletin 9912 Neponset Ave.

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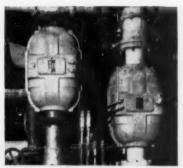




Gulf States Paper Corporation, Demopolis, Ala. Gulf States uses this 2" Magnetic Meter to measure chlorine dioxide flow. This highly corrosive chemical has no effect whatever on the Magnetic Meter.



International Paper Company, Corinth, New York. At International Paper, Foxboro Magnetic Meters allow one operator at a central panel to blend 5 pulp stocks — as well as additives and dyes — accurately and continuously.



Scott Paper C o m p a n y, Chester, Pa. Scott has a total of 9 Foxboro Magnetic Flow Meters. The first installed on a bleach line over 6 years ago, has required maintenance only once—a new vacuum tube for its Dynalog recorder.



Photo courtesy Patent Scaffolding Co.

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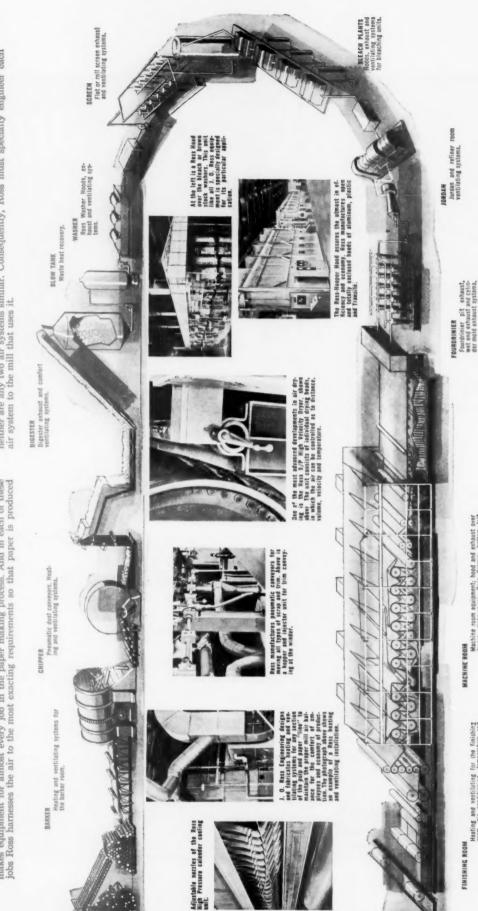
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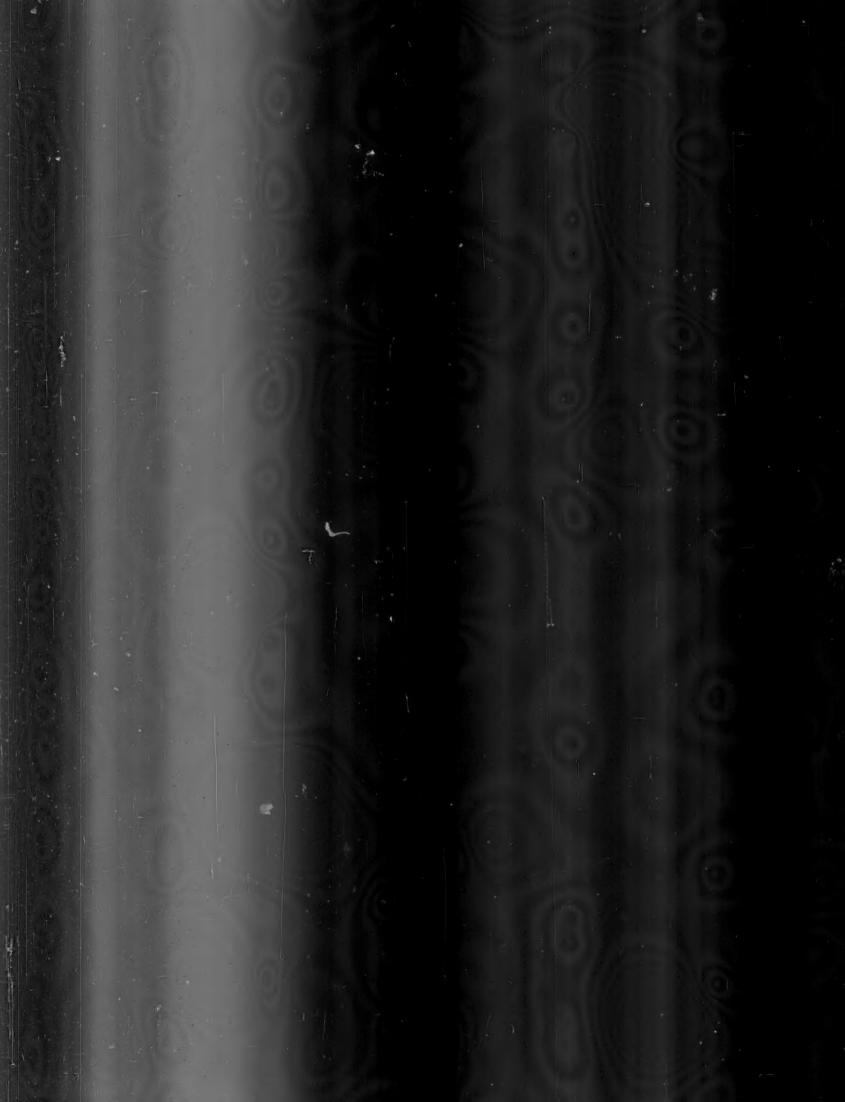
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15th TAPPI ENGINEERING CONFERENCE REPORT:

The Big Problem: Efficiency

Whether it's better equipment, more instrumentation, new construction tools or designs, the industry must reduce cost of operations

• "Business is terrible. We are operating at capacity." This seemingly contradictory statement by one chief engineer at the TAPPI Engineering Conference in Jacksonville, Florida in October contains this sober truth: Even though it is operating at levels above 90% capacity, the paper industry's profit rate is not as satisfactory as some believe it should be. If steel can operate at 40 to 50% capacity and make a profit, asks one engineer, why can't paper.

This was, in essence, the "moment of truth" that some 1050 engineers sought as they listened to some 70 papers on chemical, mechanical, civil and economic engineering. It was further evident in their questions during the open question-and-answer session and became more pointed in heated discussions in the private hotel rooms. Now that the paper industry has progressed from an art to a science, it was up to the scientists of the industry to probe the feasibility of new processes, new equipment, new materials and new design. This they did at Jacksonville.

There was another problem which aroused considerable concern. The water problem. It promises to become more acute. A special report on the water problem is included in this engineering portfolio.

Trailing blade coating is always "hot" and there was a lively debate on this subject in Jacksonville. One of the manufacturers of trailing blade coaters told P&P's editor that the see-saw battle between on- or off-machine coating is now swinging in favor of off-machine. Just a few months ago, as PULP & PAPER reported, it was the reverse. Yet several big machines on publication grades and bleached kraft have gone to on-machine coating.

Another subject of considerable interest at Jacksonville was the high velocity air dryers (popularly called "aircaps"). A special TAPPI panel of mill men reported on operating results and future plans for "air-caps." Most of the mills represented are adding additional units. One mill has 23 units in operation or on order.

Things to Come

At Jacksonville, P&P asked engineers for their own views on what are the outstanding developments coming up or what are the needs of the industry. Here are suggestions from some of the industry's top engineers.

- Roll handling. Why does it take 25 minutes to wind a roll when 20 minutes of that time is roll handling.
 - We need simplified paper machine drives.

- What are mills really doing in automation in the mill?
- We must solve our problems in asphalt dispersion and cleaning secondary stock.
 - How to get more production.
- There is a definite trend to all-electronic instrumentation, data logging and computer controls. All-electronic will come first and computer control second. How far in the future is hard to tell. It will take five to seven years to move from pneumatic to all-electronic.
- Coating. There is concern in the paper industry because of recent technical advances to make a sheet out of plastics. Some people feel that the paper industry is way behind in research and planning. There may come the day when someone can make a sheet of "paper" out of plastics with features that paper doesn't have.
- An interesting new coating development makes a sheet of coated paper using dry pigment adhesion blend without using water.
- Corrosion. Kraft digester corrosion is only a small facet of a \$250,000,000 to \$600,000,000 corrosion problem, which also concerns structural equipment, Four-drinier wires, hoods, etc. Where else can the industry save that kind of money?
- There has been a growing awareness in the past 15 years of the importance of speeding up paper machines and making improvements. Now much activity is being focused toward the economic breakthrough which will have to be made for raw materials and pulp, for (1) from the standpoint of cost, (2) uniformity and (3) improved qualities from available raw materials.
- The Pacific Northwest has made tremendous strides in wood use and these are beginning to catch on in the South.

As has been done in previous years, PULP & PAPER presents a special report on the 15th TAPPI Engineering Conference. Each report has been written by an engineer who is a specialist in the field in which he reports. Here is presented a significant analysis of what was important at Jacksonville.

ENGINEERING DATA COMMITTEE

How Data Sheets are Processed

By HAROLD G. INGRAHAM

Having attended all of the TAPPI Engineering Conferences except the first one held in Milwaukee in 1946, I can say that the 15th Conference in Jacksonville was the best organized. Each of these annual meetings seems to outdo the preceding one in program arrangement, quality of papers presented and in the efficient handling of the many details that make any meeting a success. Of course, these things just don't happen by themselves. Someone has to do the advance planning.

At the end of each Engineering Conference, officers of the Engineering Division, all committee chairmen and many other leading figures of the meeting get together and spend several hours discussing ways of improving the next conference. Problems such as acoustics, audio-visual equipment, legibility of slides, etc., are brought up and a solution for each is put on the agenda to be tried out a

year later. Attendance at this important post-conference meeting is mandatory and decisions arrived at here are the real reason these Engineering Conferences run so smoothly.

The Engineering Data Committee is made up of one or more representatives of each of the fourteen committees of the TAPPI Engineering Division. Our operations have differed to some extent from the other engineering committees in that, to date, we have not presented any papers at these conferences. We meet twice a year, in February in New York and at the Fall Engineering Conference, at which time we review the status of data sheet programs in each committee, outline courses of action to be taken to speed up preparation of data sheets and try to stimulate continuing interest in the data sheet program.

According to the dictionary, "engineering" is defined as "the art and science of the utilization or conversion of natural products or energy into products useful to man." Combining this with the definition of the word "data" as being "known, assumed or conceded facts from which an inference is made," it is obvious that any functioning group carrying the title of

Engineering Data Committee has an important assignment and responsibility to the industry it serves.

The general objective of this committee, as set up in the TAPPI Engineering Division Administrative Policy is "to present to the pulp and paper industry in general, and to the members of TAPPI in particular, accurate and authentic technical information in a brief and readily usable form, to assist technical personnel in the solution of problems of design, operation, planning and maintenance. The long term objective of the program is to use this accumulated information to publish a pulp and paper engineering handbook."

The idea of issuing data sheets to their members originated with the Technical Section of the Canadian Pulp and Paper Association in 1935. In 1940 TAPPI arranged with the CPPA for permission to distribute about 200 of these accumulated data sheets to its members and followed this by establishing a Data Sheet program of its own. The name Data Sheet Committee was later changed to Engineering Data Committee.

We are sometimes asked how we process a data sheet, how we go about getting people to agree to work up a data sheet and how do we know the areas where a data sheet could best serve the interests of TAPPI. A complete explanation of the answer to these questions is too lengthy to outline here; however, it might be of some interest to present a brief summary of how it works.

There is available in TAPPI Headquarters for use as a guide by every committee sponsoring data sheets, a master outline, listing by title hundreds of items in all categories of the pulp and paper industry. Any of these items can be subdivided into an almost unlimited number of areas where useful data sheets might originate. The problem is not in determining what areas need developing into data sheets, but how to get them done. The sponsoring committee approaches anyone they can and tries to persuade him to take the necessary time and exert the necessary effort to prepare a data sheet. Having obtained it from the author, the data sheet is carefully



Harold G. Ingraham

Mr. Ingraham is project engineer for Chas. T. Main, Inc. and is chairman of the Engineering Data Committee. He has had more than 40 years experience in pulp and paper, has worked for Marathon Corp., and the late V. D. Simons, consulting paper mill engineering. He also served as chief engineer, Bird Machine Co. and for the past 11 years has been with Chas. T. Main. Mr. Ingraham has been a member of TAPPi since 1921 and was an original member of the Mechanical Engineering Committee.

reviewed by the sponsoring committee and the Engineering Data Committee Chairman. If there are no adverse comments, the data sheet is then readv for publication; otherwise it is returned for revision.

All of this process takes considerable time but, in issuing this data to TAPPI, the Engineering Data Committee is certifying to the correctness, the completeness and the adequacy of the data and is giving it a standing of authority within the industry.

To increase the scope of this activity for gathering, authenticating and distributing essential technical information, the Executive Committee of TAPPI has recently approved a program whereby the present data sheet program of the Engineering Division will cover all divisions of TAPPI.

It is proposed that the name be changed to the Technical Information Program and that a full time engineer be employed and assigned to this project.

CORROSION COMMITTEE

Corrosion Bill is \$250-600 Million

By EDWARD HOPPER

There are no costs available on corrosion in the industry. It is difficult to arrive at an approximation. The costs of replacement of corroded equipment, the repair, maintenance, painting and welding could be determined. However, the expenses of downtime, loss of production, and loss in quality are difficult to arrive at. Also, there are many instances where corrosion may be a contributing factor which may not be considered as corrosion failure.

Estimates range from \$250,000,000 to \$600,000,000 per year as the price the pulp and paper industry pays for corrosion. If the lower figure is taken and a figure of 24,000,000 tons is used, the resulting cost is more than \$10 per ton of pulp produced. Where else could the hard pressed industry look for possible savings of this magnitude.

The committee reviewed some of the easy to see expensive items in a mill. One of these, surface protection of mill buildings, structures, tanks, etc., is easily observed in almost any mill. How much of the repeated painting could be saved by proper surface preparation before painting? As several members stated, painting without proper surface preparation is money thrown away.

Another pertinent question was raised regarding the value that the industry is getting for its purchasing dollar. In many instances, orders are placed without any specifications. In such cases what is the purchaser likely to get and what redress does he have in the event that the material or equipment fails, due to corrosion or other cause. In many instances, orders are placed with the low bidder and too often corners are cut to reduce costs and a substandard job results.

Furthermore, how does the purchaser know that he is getting what he specified and paid for? How many times does the purchaser have a check made on material or an inspection carried out on his purchased equipment? Too frequently there is none. Many times the deficiency is only discovered when the equipment fails.

The Corrosion Committee has an unlimited field for operation. We hope to consider specifications and inspection procedures. We also hope to investigate failures due to corrosion as they result and develop information

on all types of materials of construction. We will make the information to be developed available to the industry.

The six papers and panel discussion presented at the Jacksonville meeting developed considerable discussion. The papers and authors were as follows:

"Ductile Iron in the Pulp and Paper Industry," by E. G. Holmberg, International Nickel Co.

"Properties and Performance of Reinforced Polyester Plastics," by R. E. Gackenbach, American Cyanamid Co.

"Materials of Construction in a Bleached Sulfate Pulp Mill," by J. M. Jopp, Columbia Cellulose Co., Vancouver.

"Fabrication of Plate Structures for Paper Mills," by R. A. Davis, Chicago Bridge & Iron Co.

"Regional Report on Alkaline Digester Corrosion," by Z. S. Blanchard, Chicago Bridge & Iron Co. and J. B. Morrison, Crucible Steel Co. of Amer-

"Stainless Steel Weld Metal Overlay Linings for Pulp Digester Vessels," by K. L. Crooks and G. E. Linnert, Arraco Steel Co.

The discussion on the topic "Stainless Steel Overlay in Digesters" had the following panelists: F. D. Whitehead, Jr., West Virginia Pulp and Paper Co., David Innes, International Paper Co., Martin Cyr, Fraser Cos. Ltd., Charles Jelm, American Alloy Corp., David Kingsbury, Chicago Bridge & Iron Co., and G. E. Linnert, Armco Steel Co.

It was evident from attendance at the two sessions that the effect of corrosion and corrosion losses concern pulp and paper industry personnel. There is great interest in plastics and reinforced plastics to combat the very corrosive conditions in the bleach plant. There was also great attention paid to the 34 years experience with materials of construction in kraft pulp mills as it was outlined by J. M. Jopp of Columbia Cellulose Co. and to the details in plate fabrication and to the use of ductile iron.

The session on alkaline digester problems shows that this subject is still of major interest. Regional reports show that corrosion rates in carbon steel digesters have increased in the last year. It appears from the reports, that liquor charging is considered to be the greatest factor in causing cor-



Edward W. Hopper

Mr. Hopper is a nationally known specialist in metallurgical and corrosion problems. He is chairman of TAPPI's Corrosion Committee and also chairmanned the session on corrosion at Jacksonville. He has written many articles on digester corrosion. He is a consultant for several pulp and paper companies, as well as J. F. Pritchard & Co. He attended Columbia U. and Pratt Institute. Mr. Hopper developed the first electrolytic tin strip plating process with Dr. Colin G. Fink.

rosion. The use of Inconel and stainless steel clad digesters still indicates that long, useful lives can be expected from these higher priced vessels. The reports also show that while stainless steel overlay is not a cure all and failures do develop, it is a useful tool in increasing the life of thinning carbon steel digesters.

The paper on weld metal overlay and the following panel discussion again showed that this subject is of vital interest. The large number of paper mill representatives plus those concerned with the installation and metallurgy of overlay showed that this subject is important and controversial. Some excellent photo-micrographs showed once more how corrosion develops. The use of an electron probe analyzer to check for non-uniformity in alloy composition proved conclusively that there are areas in the weld overlay which are too low in the required alloy to give the desired corrosion resistance. These low allow areas corrode out and failure of the overlay results. There is still a question as to what and how much of the alloy constituents are required to produce a trouble free overlay deposit.

Unfortunately, at this meeting and at the Corrosion Committee meeting, no definite conclusion was arrived at on how to set up a specification on installing overlay or how to absolutely prevent the areas deficient in alloy

... TAPPI ENGINEERING... pulp-paper is third largest water user

composition. However, overlay has progressed to the point where a five vear guarantee is available to the purchaser. The Sub-Committee is also considering setting up a specification.

CONCLUSIONS: New problems

arise with new processes. Almost

every mill location will be affected by corrosion in one form or another. The problems that arise in one location frequently repeat at another. Therefore, definite information and advice can often be passed from mill to mill. However, these recommenda-

tions can only be made available if there is a common meeting ground for discussion of the industry problems. We hope that the Corrosion Committee meetings and sessions will provide these opportunities for transmitting information and ideas.

ELECTRICAL ENGINEERING

Trend to Purchase Power Seen

By R. F. SORENSON

The Chairman of the Electrical Engineering Committee, S. Andersen of West Virginia Pulp and Paper Co., presented an interesting program of six papers this year. The sixth paper was followed by a panel discussion. The session was very well attended, and exceeded our record of 216 who attended last year's session.

"Electrical Problems Involved in Utility Company—Paper Mill Plant Ties (Project 790)," by J. Davey, Louisiana Power and Light Co., New Orleans, and H. H. Mullins, Olin-Mathieson Chemical Corp., Forest Products Div., Monroe, La.

During the discussion, it was pointed out from the floor that the use of electrical energy in pulp and paper mills has been growing more rapidly than the use of process steam. For this reason, more and more mills are finding it economical to purchase power from the utility companies. This is a new experience for many mills, particularly in the South, for both operating in parallel with the utility or in purchasing blocks of power not synchronized with the mill power system. The paper is very timely in presenting the problems involved.

Mr. Davey said it is particularly essential to provide adequate relaying to separate the mill from the utility during power disturbances. After this separation, he noted that load must be shed in mills operated in parallel with the utility at approximately 58 cycles per second so that the mill's generation can carry the load. When power is restored by the utility, resynchronization must be made with the paper mill generation before reclosing.

There was disagreement regarding immediate reclosing on mill systems with no plant generation. The utility cited many years of successful immediate reclosing on such systems with no electrical equipment failures in the mills. Electrical equipment manufacturers stated that immediate reclosing on such systems resulted in undue strains on equipment, due to out-of-phase conditions and resulted in ultimate failures of electrical equip-

Complete cooperation between the mill and the utility was deemed very essential to a successful operation. Mr. Davey stressed that, in planning a tie with a utility, the present plans must be made to fit in with possible growth and expansions.

Protecting A. C. Motors (Project 857)," by H. A. Wright and T. F. Bellinger, Allis-Chalmers Manufacturing Co.

This was an excellent paper. Mr. Wright did not read the paper, but presented a very interesting summary of some of the essentials in motor overload protection. Among these was his suggestion to keep the control as simple as possible. This is in recognition that we do deal with contaminated atmospheres in paper mills, and the simplest control stands the best chance of working throughout the years.

Mr Wright also stated that a thermal detector embedded in the motor winding is the most reliable method of detecting an overloaded motor. He said the new methods of insulating motor windings may change many of the old rules of thumb. Many materials now used are so new that experience with them is limited and he indicated that higher winding temperatures than those now thought proper might be maintained without seriously reducing the normal life of the motor. At this time however, we must approach this with caution.



Richard F. Sorenson

Mr. Sorenson reviews for the second time the electrical engineering sessions. He is the electrical engineering sessions. He is electrical engineer, central engineering division, St. Regis Paper Co., Jacksonville, Fla. He earned his bachelor's degree in electrical engineering at the U. of Minesota, was associated with General Electric for 6 years and Union Bag-Camp at Savannah for 7 years before joining St.

"Power Requirements of Feltless Pulp Machines (Project 620)," by C. C. Collins, General Electric Co., Schenectady, and G. E. Clink, The Sandy Hill Iron and Brass Works.

This project recently completed by a Subcommittee of the Electrical Engineering Committee will present power constants to be used in selecting motors for driving feltless pulp machines. Mr. Collins said the return of a very high percentage of the questionnaires sent out was very gratifying. The data obtained from these questionnaires have been weighed by engineering judgment and the constants are now fully developed. These constants will be presented to the industry as technical information in the near future.

"Structural Board Machine Power Data (Project 621)," by M. H. Fisher, Westinghouse Electric Co.

Mr. Fisher presented an interim

report based on data received from questionnaires on 14 machines. Limited data supplied, and variations in machine configuration, resulted in insufficient data to be conclusive in formulating power constants at this time. He suggested that the data be used in a "Guide to Selection of Machines" for trial use. After several years use, additional data will be obtained and a data sheet can be issued.

"Selection of Refiner Motors (Project 852)," by C. C. Herrington, Buckeye Cellulose Corp., Foley, Fla.

This presentation was different from our usual procedure in that it was to announce the beginning of a project. Mr. Herrington pointed out the need for a study of refiner motor applications, and enlisted the help of the industry to complete this important project.

"Flexibly Coupled Motor Bearing Design, Application, Installation, and Maintenance Considerations," panel with J. R. Fielding, Union Bag-Camp Paper Co., Savannah, J. F. Fenske, Allis-Chalmers Mfg. Co., Norwood, Ohio, R. W. Foster, Champion

Paper & Fibre Co., Canton, N. C., J. V. Cundelan, Rayonier Inc., New York, J. J. Kimmel, Koppers Co., Baltimore, Q. W. Heim, The Falk Corp., Milwaukee, G. 'C. Werner, Thomas Flexible Coupling Co., Warren, Pa.

This part of the program was a panel discussion, preceded by a paper outlining the general problems in this in this area presented by J. F. Fenske. The panel discussion which followed this paper was moderated by J. R. Fielding.

Mr. Fenske said that, while the majority of the considerations studied by the Electrical Engineering Committee relate to electrical characteristics of the equipment, it is also logical that studies pertaining to the mechanical characteristics play an important role in proper design and application. The paper was limited to general purpose applications involving motors flexibly coupled to centrifugal pumps, agitators and so forth. The discussion was also limited to the study of thrust problems of flexibly coupled horizontal sleeve bearing

motors. Mr. Fenske pointed out that, in general, the radial load for sleeve bearings is very conservative but that they are not designed for continuous thrust loading. It was proposed, and demonstrated by theoretical calculations that, under conditions of misalignment and wear, thrust can be created within geared, spiral laced and pin connected couplings. It was also brought out that the proper application of limited end play couplings can prevent this thrust from damaging the sleeve bearings.

During the panel discussion, it was mentioned that one mill has standardized on limited end play couplings with a great reduction in bearing failures. It was brought out that the user has a responsibility to the coupling manufacturer in maintaining proper alignment, correct application and proper maintenance. One comment indicated that thrust could not be created within a coupling. This was countered with evidence that a recently conducted test indicated that under controlled conditions, a thrust of 400 to 700 lbs. had been observed.

SANITARY ENGINEERING

New Thoughts on Water "Shortage"

By WILLIAM A. MOGGIO

"Industrial Water Conservation and Re-Use," by R. D. Hoak.

Adopting a position contrary to the current highly publicized predictions of a water shortage in the U.S. within 40 years, Dr. Hoak stated that there is no cause for alarm, either now or 40 years hence. Dr Hoak reasoned, using the same source data as the others, that there is a tendancy among those who predict an impending national shortage to imply that water use means consumption-that most of the water withdrawn by municipalities and industries is not really re-used. He presented figures suggesting that the U.S. currently needs 231 billion gals. per day of water for all purposes. This figure, however, is really the gross requirement and he calculated the net daily requirement to be only 72 billion gals. per day by applying conservative factors for consumption (as opposed to use) of 100% for rural uses, 10% for municipal and industrial withdrawals, 1% for steam power generation and 60% for irrigation.

Because industrial development generally occurs in or near metropolitan centers, these concentrations may aggravate local water supply problems from time to time. Water conservation will necessarily be practiced to a greater extent in such areas because the need for enough water is the important consideration, not the economics of conservation. Dr. Hoak also pointed out that during the drought of 1953, in 68% of the reported water shortages the need was for expanded treatment and distribution facilities rather than a shortage of raw water supply.

Industrial water conservation is practically always governed by economics. Regardless of the source of water supply the value of water saved must exceed the cost of the conservation measures adopted. However, wasteful use of water by industry is being recognized as a significant economic loss.

Among industrial groups the pulp and paper industry is the third largest water user, using 13.4% of the total industrial withdrawal in 1954. The industry has a good record for con-



Wiliam A. Moggio

Mr. Moggio has considerable experience in water problems. He is now chairman of TAPPI's Sanitary Engineering Committee. Mr. Moggio is research chemist, research and development center, Armstrong Cork Co., Lancaster, Pa. He chairmanned the Sanitary Engineering session, which he reviews here. He was formerly by-product manager of St. Regis Paper Co's. Lake States Yeast & Chemical Div., Rhinelander, Wis. Before that he was chief chemist specializing in lagoon and effluent matters for East Texas Pulp & Paper Co., and has been a specialist for years with National Council for Stream Improvement. He earned his b.s. and m.s. degrees at Rutgers U.

"There Will Be Enough Water"

America has no cause to worry about a water shortage, either now or in the year 2000. This is the opinion of Dr. Richard D. Hoak, head of the American Iron and Steel Institute water research project at Mellon Institute. An expert on water resources, Dr. Hoak discussed industrial water conservation and re-use at the 15th TAPPI Engineering Conference. (The full text of Dr. Hoak's address was published in the pre-print at the meeting. His talk will also be published in full in Tappi magazine).

Because of the scare publicity given to the possibility of an impending water shortage by various government agencies and personnel, suggests one engineer, Dr. Hoak's paper is a significant contribution in combatting this phase of conservation for conservation's sake alone. The reasons for distorting the picture on water supplies are obvious and they should be of direct concern to the pulp and paper industry, since it will inevitably lead to increased costs for waste treatment and stream pollution abatement.

President Eisenhower has called a water conservation conference in Washington, Dec. 12-14. Dr. Hoak has requested 5,000 copies of his talk for distribution prior to this conference. Obviously the Iron and Steel Institute believe they have an economic stake in this question of water conservation.

PULP & PAPER intends to report on this conference, its objectives and its achievements. It is important that the pulp and paper industry be represented.

Rejecting alarmist prophecies that the country faces a critical water shortage, Dr. Hoak said that there is a high-potential water resource that many experts seem to have overlooked. He explained that only about one-third of the water used in the United States is actually consumed. Surface water is used many times over as it flows from its sources to the ocean, and the true need is only the volume actually consumed by evaporation, incorporation in manufactured products or otherwise temporarily eliminated from the cycle.

"Unfortunately," he said, "those who predict an impending national water shortage tend to confuse use with consumption and do not realize that most of the water withdrawn by industries and municipalities is really

re-used." He cited figures on current uses of water in the U.S. as an example of this confusion, suggesting that the country needs 231 billion gpd for all purposes. Breaking down this total by uses, Dr. Hoak estimates there is actually 100% consumption only in rural use; 10% consumption in municipal and industrial withdrawals, 1% for steam-power generation and 60% for irrigation. The total of these consumptions is about 72 billion gpd, representing the supply of new water really needed to support all uses.

Nationally, rainfall runoff to streams amounts to about an average daily water supply of about 1.22 trillion gpd, potentially available for use.

The prime factor in conservation boils down to economics, and industry is learning that even where normal supply is plentiful the cost of conservation measures is often far exceeded by net savings in the cost of water. Such measures are often costly, especially in old plants originally designed to operate efficiently with a large volume of once-through water. Top grade engineering, thorough control and intelligent planning also are required in revamping systems to save water. Practical ways of reducing water use are based on preventing wastage. Automatic valves that close when released, and detection and elimination of leaks are two methods. Meters installed on lines to each department make supervisors cost-conscious and inclined to enforce conservation. Thermostatic controls can be used to regulate the flow of cooling water. Regular descaling of heat exchange equipment to improve heat transfer may save 25% in cooling water. Up to 95% of once-through cooling water can be saved by recycling water through cooling towers, spray ponds, or evaporative condensers. One company, says Dr. Hoak, saved \$100,000/ year by reducing wasteful water usage 40% through installation of devices that cost \$150,000.

Dr. Hoak says that re-use of water by industry should be one of the most important technological developments in the next 10 to 25 years. There is sound authority, he says, for predicting that increasing industrial re-use of water to 300% from the current average of 100% will permit twice the present output of goods without a significant increase in industrial fresh water demand. serving water, each gallon of water being used 2.6 times as compared to 1.9 times for the average of the five largest industrial users, who withdrew 85% of the total water used. Average re-use for all other industries is 1.3.

The projected growth of the pulp and paper industry suggests that even more conservation will be necessary in the future. New plants can be designed to incorporate water conservation measures that would be impractical in existing plants, for example, using separate systems for potable, process and cooling waters. Process effluents, with or without treatment, can be recycled to operations with successively lower quality requirements. The pulp and paper industry has been particularly successful in reusing process water this way.

"Water Treatment for Color Removal," by S. T. Powell and L. G. von Lossberg.

Mr. von Lossberg pointed out that present demands in the pulp and paper industry for high brightness paper products necessitates the use of process waters low in color and turbidity Surface water supplies usually contain these impurities to such a degree that they must be treated before use as process water. Generally, coloring matter in water is of collodial nature resulting from decaying vegetation. In some cases color may result from materials in true solution. In the latter instance color may be very difficult to remove from the water supply.

Methods for color removal outlined by Mr. von Lossberg included coagulation and coagulation aids, oxidation, adsorption and ion-exchange resins. This subject was comprehensively summarized by the author and will prove very valuable as a reference source.

Mr. von Lossberg's presentation was well illustrated with slides and thor-oughly documented with excellent reference sources. He also presented five case histories of particular interest involving the use of coagulation for removal of color from raw water. These case histories graphically illustrated his conclusion that coagulation and treatment of water for color removal constitutes a combination of an art and science. He also pointed out that where color removal is required the ultimate selection of the method used should be based on laboratory tests, preferably supplemented by pilot plant studies.

"Some Methods of Waste Water Recovery for the Pulp and Paper Industry," by T. L. Moore. Mr. Moore reviewed briefly various pulping and papermaking processes currently being utilized and summarized the characteristics of the effluents from each of the manufacturing processes involved.

Water re-use at a mill is dependent on many factors, most important of which are product quality requirements, types of pulping processes, availability of fresh water and the cost of treatment and distribution of the effluent waters. Mr. Moore stated that increased usage of reclaimed water is indicated and he outlined those process effluents which he felt could be reclaimed and re-used in certain other process operations with suitable external treatment.

Mr. Moore went on to outline effluent treatment processes currently in use, including primary treatment of effluents by settling and secondary treatment processes including chemical coagulation and biological oxidation using such techniques as activated sludge, contact stabilization, aerated lagoons and biological filters. Of particular interest was the data, in the form of tables and graphs, which showed the loadings and treatment efficiencies attainable by the various treatment process reviewed.

MECHANICAL ENGINEERING

Calender Roll Bending Stirs Interest

By JOHN MUDGETT Chief Engineer Strathmore Paper Co.

The Mechanical Engineering Committee program was well attended, indicating an unusual interest in the papers.

"Uniform Nip Loading Control of Machine Calenders," by J. E. Perkins, Black-Clawson Co.

A new concept for calender design for paper mills incorporates hydraulic cylinders attached to extended journals on both the front and back sides of the bottom calender roll. By hydraulic pressure applied both upward and downward, the bottom roll could be deflected to maintain uniform nip pressure for all combinations of nips and rolls in service for an eight-roll calender stack. This bottom roll bending device, therefore, gives an operator the ability to easily correct crown for all operating conditions without regrinding any rolls for grade changes.

Since the calender was only recently installed, actual mill operating experience could not be reported to the extent that was intended when the paper was scheduled. One engineer from a company making calender rolls pointed out that this concept had been in use for some time in plastic, rubber, and steel rolling machinery, and that paper mills should have no concern over the practicability of such a device.

The author pointed out that, while separate control was available on both the front and back cylinders, it was not their intention to bend the roll unevenly to correct for paper problems. Your reviewer wonders if this concept of bottom roll bending might have good application on the wet presses of the paper machine where wide variations of grades and press loadings are encountered. We hope

our next Engineering Conference will permit a review of the mill's experience, now that the calender is in operation.

"Machine Calender Roll Crowns and Pressure Distributions," by J. W. Riese, Kimberly-Clark Corp.

This was a new mathematical approach to the calculation of proper calender crowns. The author pointed out the significant difference between the accepted roll deflection formulas where the rolls are assumed to be "infinitely stiff" and presented curves showing the difference in nip pressure that result from using the old formulas and his new concept in which the roll is considered to have a "distributed spring constant."

This paper aroused considerable interest and questioning on the part of engineers familiar with calender design and calender roll manufacturing. A lively discussion resulted along the line of the ability of modern roll grinders to produce crown curves developed by the theoretical formulas. Mr. Riese was able to satisfy the questioners that the differences were very minor and that his equations could be used in a very practical manner.

"Mechanical Design and Installation Requirements of Trailing Blade Coaters," by J. P. Munton, chief engineer, Rice Barton Corp.

This paper was concerned primarily with late 1959 refinements to the trailing blade coater designs, indicating that many developments had been made to produce a more versatile unit for better quality product. Many questions from mill engineers acquainted with blade coaters indicated that there certainly was room for these improvements and possibly for many more in the future.

We feel, however, that the author established his point quite clearly that many of these problems result from poor understanding and judgment on the part of the operators and that, in spite of this criticism, the numerous installations of the trailing blade coater justifies its design and existence. We wonder if more discussions like the one resulting after the paper might not lead to a better understanding of the equipment and improved efficiency of its operation.

"Data Sheets on Vacuum Requirements for Paper Machines," by F. A. Taska, Clark & Vicario Corp.

This presentation consisted of explaining five new data sheets covering recommended vacuum requirements as now used by all the recognized suppliers of vacuum pumps and vacuum equipment for the wet end of the Fourdrinier machines. The author pointed out that careful selection of vacuum equipment is becoming increasingly important for the economical operation of paper machines, since high-speed Fourdriniers are now using as much as 3000 hp on this equipment. Poor judgment on the part of the applications engineer can certainly result in expensive and wasteful investment and operation.

These data sheets are the first step in a program now in progress in the Mechanical Engineering Committee. Others are to follow as a guide for designing suitable pipe velocities in vacuum systems and for sizing drop-legs on vacuum systems. The author recommends and the Mechanical Engineering Committee concurs that a research program might well be entered into to determine the economical proportions of vacuum equipment. For example, we wonder if it is always economically justified to increase the widths of couch roll vacuum boxes which require larger rolls and pumps and make for extra investment when purchasing new equipment. Such a program could hardly be carried out

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on an operating machine. The Committee plans to investigate seriously an appropriation for research into this question and suggestions are invited from all persons interested in the subject.

"A Comparison of Paper Mill Refining Equipment," by David R. Dalzell, Jr., chief engineer, E. D. Jones Corp.

Mr. Dalzell presented a very intriguing method of mathematically comparing refining capabilities of the various types of refiners in use today, such as beaters, jordans, other conical refiners, and disc refiners. While the mathematical values developed had no significant units, they were presented as being helpful in rating one piece of equipment vs. another for a specific refining problem. The tabular results presented a good case for disc refiners and, perhaps surprising to a number in the audience, an exceptional case for the beater. It would appear from this paper that for hard tough fibers, such as rag, the beater still appears to have the most refining ability and the most flexibility for different refining requirements.

CHEMICAL ENGINEERING

Computational Science is Here

By Dr. EDWARD F. THODE

This was an informative discussion of computational techniques which have just recently become valuable to industry because of the advent of high-speed computers. Richard W. Van Duyne, operations analyst for West Virginia Pulp and Paper Co., New York, led off the discussion with "Linear Programming and the Paper Industry." Mr. Van Duyne, a physicist whose interests have turned to management science, pointed out that linear programming is a mathematical technique developed in only recent years which can be applied to certain problems in the paper industry. Linear programming was first used operationally, it is believed, to solve problems of military significance during the second World War, but very little knowledge of such military applications has ever been made public. Since 1950 increasing attention to its uses in areas of management science has developed.

In the pulp and paper industry, Mr. Van Duyne continued, the problem areas where this has been useful so far are the trim problem, the machine assignment problem, product distribution, and pulpwood procurement.

He defined linear programming simply as the economical allocation of physical resources to minimize the cost or maximize the profits of allocations. Basically, linear programming can assist management in three important aspects of decision making: operations, planning and standards. The four problems within the paper industry so far described by linear programming equations all involve these aspects of decision making.

Mr. Van Duyne emphasized how much linear programming is dependent on development of automatic computation equipment. Considering recent advances in the latter field, the decade of the 1960's should be one which will show extensive use of novel tool of linear programming.

Another physicist turned management scientist, William E. Winans of the Data Processing Division, International Business Machines Corp., discussed principles and uses of computer simulation, especially as it applies to problems concerned with industrial operations. Simulation, Mr. Winans pointed out, is an attempt to imitate the behavior of a system to study its reaction to specific changes. In general terms simulation is not a new technique since physical simulation has been used for many years. Model testing in the aircraft and ship-building industries are an example. Computer simulation, on the other hand, is based on a mathematical or logical model rather than a physical one and is much more recent in its concept and availability.

Although some specialized early examples go back to pioneering research in the 1930's, widespread use of computer simulation dates from the later 1950's, specifically after the general use and availability of high-speed stored program digital computers. This is simply because in almost all potential applications of simulation there is too great a volume of logical, numerical and bookkeeping operations to permit feasible solution by manual methods.

Computer simulation, in one sense, is an extension or substitute for laboratory experimentation and, as such, its results permit one to test hypo-



Dr. Edward F. Thode

Dr. Thode is Administrator, Engineering and Technology Section, The Institute of Paper Chemistry at Appleton, Wis. He chairmanned the Chemical Engineering session on operations research which he reviews for P&P. Dr. Thode earned his doctorate in science at M.I.T. and was in the pulp and paper section, University of Maine before joining the Institute.

theses, establish feasibility, demonstrate or verify new ideas, compare alternatives, and gain insight in the workings of the system.

Mr. Winans indicated that among the many uses of simulation certain general areas may be cited where problems are being solved today by this technique. They include: determination of the correct balance of the product capacity with inventories, inventory control and distribution policies, equipment purchases and plant location, and machine or equipment design.

"Numerical Analysis in Research and Engineering" dealt with a collection of mathematical techniques, some of which are hundreds of years old. However, in this new computer age these techniques find far greater value than they ever had before. Richard W.

Nelson, of the Physics Group, and Edward F. Thode of the Engineering and Technology Section, Institute of Paper Chemistry, described the newly enhanced importance of these techniques and cited a few examples from physics and engineering research.

Numerical analysis, these authors pointed out, is rather simply defined as the branch of mathematics devoted to the solving of problems in the terms of numbers. It was explained that engineering analysis actually comprises three separate elements, namely, construction of a mathematical model for a physical situation, mathematical analysis of the model, and numerical analysis to obtain specific results.

The operations of most frequent occurrence in physics and engineering using numerical analysis include: (1) interpolation, (2) numerical integration, (3) solution of ordinary differential equations, (4) solution of algebraic and transcendental equations, (5) solution of simultaneous linear equations, (6) statistical

problems, and (7) matrix problems.

After citing some examples of these, the authors further commented that automatic computers provide greater speed, better accuracy, and the practical possibility of doing a sufficient amount of numerical analysis of data and the results of theoretical study. Computers furthermore have opened up for effective solution a large class of problems which previously could hardly have been attempted. The authors concluded that the engineer of the future will find a working knowledge of essentials of classical analysis indispensable to his work.

For the past three years, the writer of this summary has devoted a certain amount of effort in encouraging increased interest in the computational sciences, new and old, among the engineers and scientists of the paper industry. At first, the going seemed quite slow. Many showed little or no interest. Some who showed an interest were uncommunicative of their results, so that it seemed that it was

but the same small group doing all the talking. Even after the first public discussion of the paper industry's breakthroughs in this area, at the Pittsburgh TAPPI Engineering Conference, there still seemed disappointingly little forward motion.

Nineteen-sixty has changed that, however. Publications from Scott Paper, Kimberly-Clark, St. Regis Paper, as well as from the Institute of Paper Chemistry in this country plus several from Canadian and overseas organizations clearly indicate that our industry is significantly on the move in these areas. Virtually the entire membership of the augmented Operations Research Subcommittee of TAPPI met at Jacksonville and in a spirit of enthusiastic cooperation, adopted plans for long-range effort for coordinative industry activities.

While there is doubtless much that we as an industry must learn and must do, the writer firmly believes that the paper industry has turned the corner in computational science.

PROCESS INSTRUMENTATION

Process Control Man is a Key

By JAMES K. POWELL

R. B. Hurm of Beloit Irons Works gave a paper entitled "Principles of On-The-Machine Moisture Measuring Systems" that was a report on the results of TAPPI Project No. 775. This project was undertaken by the Process Instrumentation Committee at the request of the Technical Committee of the Glassine and Greaseproof Manufacturers Assn.

As Mr. Hurm pointed out, this report did not attempt to substantiate any manufacturer's claims or to act in any manner as a seller. The sole purpose of the report was to clarify misconceptions about the principles of sheet moisture measurement as used by various manufacturers, and to make available a ready source of reference for anyone interested in this equipment.

The principles of operation of all major sheet moisture measuring systems were discussed.

Don Michel presented "The Outlook of the Control Engineer." He pointed out that the control engineer in the pulp and paper industry must develop the overall concept of think-

ing about control problems. Too many control engineers confine their thinking and planning to one individual control system and forget entirely the effect of this individual system on the entire plant operation.

Mr. Michel also said that for the control engineer to use the overall concept, management must (1) allow the control engineer a voice in process changes or additions, and (2) give the control engineer an opportunity to think about and develop his ideas. Several examples were given of possible process control problems and their solution through the use of instrumentation. The economic aspects of the problems were considered with emphasis on the many times the economic advantages of instrumentation lie in the intangible realm of increased production and better quality.

I feel that Mr. Michel did an excellent job of presenting this subject, and it is a subject which is close to the heart of every instrumentation engineer in the pulp and paper industry. In far too many cases, the instrument personnel in the industry are not given proper consideration when changes or additions are made



James K. Powell

Mr. Powell is chairman of TAPPI's Process Instrumentation and Control Committee and chairmanned this session at Jacksonville which he reviews. He is instrument dept. supt. at Bowaters Southern Paper Corp., Calhoun, Tenn., which he joined in 1953. He was with the Southern Kraft Division of International Paper Co. for 15 years. Mr. Powell earned his b.s. in chemical engineering at Mississippi State College.

to the process. Of course, in many mills there are as yet no qualified instrument engineers. The industry must realize that instrumentation, or automation if you will, is here to stay, and that qualified engineers for this type

... TAPPI ENGINEERING... debate efficiencies of wider, faster machines

of work are not easy to find. The full production potential of the pulp and paper industry as a whole will not be reached until the industry makes better use of the available instrumentation equipment and of its available personnel.

Interim report on TAPPI Project No. 692, "Organization and Importance of the Paper Mill Instrument Department," was presented by E. W. Prince who for the past three years, has served as vice chairman of the Process Instrumentation Committee and has now taken over as chairman.

This project was originated within the Process Instrumentation Committee. The committee felt, and still feels, that one of its primary objectives is to present to the pulp and paper industry a criterion for setting up an efficient and economical instrument department. A questionnaire will be mailed to paper mills throughout the United States, and the data from this questionnaire used as a basis for the final report. This final report will be given as a part of the Process Instrumentation technical session at the next Engineering Conference.

In the final analysis, any good results obtained from this project will depend almost entirely on the cooperation received from paper mill

management personnel. All mill management personnel are urged to see that the questionnaire is completed and returned to TAPPI Headquarters when it reaches their mill.

In addition to the technical session of the Process Instrumentation Committee, one paper was co-sponsored with another committee. This paper, entitled, "Continuous Freeness Recording Controller," was presented as a part of the Chemical Engineering Committee technical session.

The paper is a result of experimental work done in the Research and Development Division of Kimberly-Clark Corp. The equipment consists primarily of a rotating drum covered with Fourdriner wire mounted in a box. The drum is driven by a variable speed motor Stock enters one end of the box and the water drains through the wire, causing the stock to adhere to the upstream side and washing it off the downstream side. The level in the upstream compartment is measured by means of a bubble pipe and controlled with a control valve in the sample stock line.

The consistency of the sample stock is regulated by admitting a constant amount of water to the stock sample, which is taken from a source of consistency controlled stock. Variations in freeness are noted as a change in the flow of stock to the freeness measuring box. The stock flow is measured through a concentric orifice plate using water purges on the orifice taps and a force balance type flow transmitter.

In spite of results obtained during the testing of this freeness measuring equipment, I have many reservations as to the feasibility of its use as anything but a laboratory instrument. There are far too many possibilities of variations in freeness recordings due to outside influences. Among these are: stock temperature variations (2) stock consistency variations. (3) bubble pipe plugging, (4) unequal flow meter purge water to orifice taps, (5) failure of stock to adhere properly to screen.

Any of the objections I have raised, and others which could be mentioned can, of course, be corrected through continual maintenance. This would prove entirely too costly a method of measuring freeness. The people connected with the development of this freeness recorder are to be commended for the work done, but I do not believe the equipment, in its present shape, will prove satisfactory for continuous freeness measurement under plant conditions.

ECONOMIC ENGINEERING

Launch Cost Reduction Survey

By G. W. SARGENT, Jr. Beloit Iron Works

The fifteenth engineering conference was the most successful thus far, particularly for the quality of the papers presented at each of the technical sessions. The Economics Committee was glad to be a part of such a successful program.

Realistic Budget Control of Large Scale Contracts," by J. G. Nagro, M. W. Kellogg Co.

Mr. Nagro's paper reviews these management principles which permit successful application of fixed costs to large scale contracts. Corporate groups entering into large construction or expansion programs generally lean toward cost plus contracts because of the many unknown factors, Applied techniques such as discussed by Mr. Nagro should tend to

dispel the reluctance to consider fixed cost contracts as knowledge of the methods become better known. Difficulty in application of the discussed principles to intra-company programs might arise if supervising personnel is involved with plant responsibilities.

"Evaluation of a Moisture Control," by W. A. Smiley, Electronic Eye Equipment Co.

There are many instances in which a plant wishes to estimate the value in dollars of sheet moisture content. The chart contained in Mr. Smiley's paper will greatly facilitate such studies. The paper provides an explanation of the use of the chart and if applicable information is used for various moisture contents the dollar cost of such moisture can be determined.

"A Method for Economic Analysis of the Papermaking Process," by S. G. Holt, Consolidated Water Power and Paper Co.

In recent weeks there has been a considerable amount of discussion between various committees of TAPPI on cost reduction potentials. The Economics Committee has agreed to undertake a project which will survey member plants as to areas of greatest potential cost reductions. Mr. Helt's was therefore particularly timely. Very little comment was received on the technique proposed by Mr. Holt. The method is straightforward and simple in application as pertains to any one plant, on a single company since the internal accounting procedures would be uniform. However application to inter-company or industry wide comparisons become more involved and might lead to erroneous conclusions primarily because of different methods of gathering the information. Use of this method in industry wide comparison would require that depreciation and overhead

be considered separately from process and direct labor charges. Nonetheless this tool can be valuable in the comparison of manufacturing process.

The conclusions reached by Mr. Holt as result of the analysis are more provocative than the procedure used.

The general conclusion that wider, faster, machines are more inefficient will start a battle that would see no end. Undoubtedly application to re-stricted areas of industry might, rightfully, lead to such conclusions. By the same token however there are

many examples of wide, fast machines operating at efficiencies equal, or better than their lower production counter parts. The significance, of course, is that comparisons must be made on basis of similar products, and similar lengths of porduction runs.

DRYING COMMITTEE

Air Caps Take Spotlight

By S. G. HOLT

"Air Impingement Drying," by C. Allander, AB Svenska Flaktfabriken, Stockholm, Sweden.

The paper treats the basic physical processes connected with the evaporation from a sheet being subject to air impingement on one side while the opposite side is contacting a heated cylinder. The equations for heat and mass flow are presented and their solutions are given in the form of curves. Thereby certain restricting assumptions are made, namely (a) the sheet is assumed wet and is also in good thermal contact with the cylinder, (b) the moisture gradient across the sheet thickness is assumed not to influence the evaporation process and (c) the cylinder is assumed either to be so large or to run at such speed that the heat-up period of the sheet is short compared to the total time the sheet contacts the cylinder.

Tests have been executed to find the best values of different factors for the optimum heat transfer coefficient for a given air supply power. The results of the tests are presented in the form of curves

"An Analysis of Air-Impingement Drying" by R. A. Daane, Stanford University, and S. T. Han, The Institute of Paper Chemistry.

The use of high-velocity air jets impinging on the surface of paper to increase drying is an important technological advance in the paper industry. This paper aims at providing an engineering basis for the evaluation of the impingement method of drying. Although evaporative drying of paper is a fairly complicated process, involving several mechanisms of heat and mass transfer, particularly when the paper approaches final dryness, it is clear that moisture removal requires equivalent heat transfer to the sheet. The evaluation of a drying method, or of a particular design therefore begins with a study of heat transfer.

An index of performance, a number

indicative of heat transfer rate under conditions of constant expenditure of power required to force air through the system, is defined and evaluated for various systems. The application of air impingement to paper drying is discussed.

The above two papers prepared in response to a request by the TAPPI Drying Committee for more information on the basic mechanism of drying for high performance hoods, are essentially the same in intent and treatment. Both papers used the same general approach and treat the case a sheet with free moisture available for evaporation. In each case, an optimum hole pattern is worked out for a high velocity impingement type of dryer. Experimental methods were used based on the theoretical analyses. The nominal differences between the two practical results can be attributed to experimental methods and the system for exhausting the air from the evaporating zone. In both cases, the authors have chosen to construct a system using a perforated plate. The case for slotted holes or slot type nozzles is mentioned briefly.

'Use of High Velocity Air Impingement in Drying," Panel discussion with John G. Coats, Bowaters Southern Paper Co., W. E. McGough, Olin Mathison Chemical Corp., Monroe, La., J. J. Kilian, West Virginia Pulp and Paper Co., Luke, Md., Philip H. Murphy, Crane and Co., Dalton, Mass., J. W. Taylor, Consolidated Water Power & Paper Co., Wisconsin Rapids Wis.

During the lively discussion on the use of air impingement drying systems by members of a panel, each having some operating experience with one or more types of commercial equipment, the following points were made:

A. The use of sectionalized high velocity hoods for moisture profile correction is firmly established and represents one of the best applications of the high velocity type of drying



5. G. Holt

Mr. Holt chairmanned the TAPPI Engineering session on high velocity air drying. He is manager, research and development division, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. He was formerly chief research engineer in charge of papermaking research at Scott Paper Co., Chester, Pa. Before that he was a research engineer with DuPont Co. He earned a ph.d., a masters and an m.e. at Cornell University. Mr. Holt is chairman of TAPPI's Drying Committee.

B. The use of sectionalized drying hoods for moisture correction should be coordinated with some sort of moisture measuring device in order to insure proper adjustment.

Drying hoods for moisture correction have, in general, been installed at a convenient location in the machine rather than any consideration of dynamics. There is general agreement that a moisture correcting hood can be effective in any of several locations. There is no general agreement as to the most effective location.

D. High velocity hoods can be used to increase the drying rates of existing cylinder dryers where space and other criteria make the installation of

more dryers impractical.

E. Relatively little information is available on the effectiveness of high velocity hoods relative to normal drying cylinders. It would be desirable to rate hood capacities in terms of normal drying cylinder units. This value would vary with moisture con-

...TAPPI ENGINEERING...need lower costs/ton of shipped products

tent, furnish, and sheet weight. While such information appears most useful, it is not now available.

F. Most mills operating this type of hood have not had sufficient time to get good operating data on drying rates. They feel, in general, that they are achieving better drying performance with the use of these hoods. There are apparently some exceptions to this general statement.

G. The use of higher temperature air in the hood is apparently one method of increasing drying rates up to an air temperature of about 450°F.

"Radiant Heating—Its Characteristics, Generation and Application," by F. J. Prince and O. Wagner, Perfection Div., Hupp Corp., Cleveland, and E. S. Mack, Asheville, N.C.

The scope of this paper is to introduce and define radiant energy and describe the commonly available sources of this energy. The paper includes a brief transition into the mathematics of heat transmission and the nature and determination of heat exchange by radiation.

The conclusions drawn are that (1) radiant heat provides a rapid method of heat application, (2) pattern can be controlled and a direction given to the heat, (3) precise temperature control is available, (4) an instant response to demand can be obtained, (5) radiant heat is compact and space saving, (6) it is automated and therefore labor saving, and (7) initial investment costs are relatively low.

This all resolves itself into one single fact, and this fact is that radiant heat can advance the production methods of the paper industry into faster production rates, with controllable and reproducible results.

The above three part paper is a result of an effort by the TAPPI Drying Committee to make available more information on the possible application of Infrared radiation to the drying of paper. The authors, who are experts in their own field, are not intimately familiar with paper drying applications. They have done an effective job in explaining principles and applications of radiant heating to industry.

By L. R. VIANEY
Staff Engineer
The Eaton-Dikeman Co.
(A review of the same paper on radiant drying)

After reviewing the well known physical principles it was again pointed out that optimum design of radiant heating equipment is obtained by providing a source whose temperature produces its peak energy in a wave length band corresponding to the maximum absorptivity of the material to be dried.

A demonstration of gas heated radiant burners and a sensitive radiation pyrometer prompted many questions.

Several men in the power field requested more data on operating costs. It was clearly indicated that much more comparative data is needed.

A large pulp manufacturer was told that the authors had very limited experience with the drying of the heavy sheets therefore they could not be sure whether or not serious curl problems would result from heating one side of a pulp sheet.

INDUSTRIAL ENGINEERING AND MATERIALS HANDLING

Watchword is Lower Costs

By B. C. KENDALL

H. A. Stoess, of Fuller Co., discussed "Storage and Handling of Clay," pointing out the necessity of using a formula to find the information required to design a clay handling and storage facility in a mill. The formula is: What plus When plus Where plus How equals the Facility. It can be used for either dry or slurry type clay. All the possible problems that might be confronted were discussed and analyzed.

"New Concepts for Automated Roll Handling" was the subject of a paper by S. Sundahl and C. Eitel, industrial engineers with Union Bag-Camp Paper Corp., Savannah. This new and unique system of jumbo roll handling consists of both semi-automatic and automatic systems. The on-floor system has belt conveyors and rolls whereas the overhead system is an automatic and/or manually controlled monorail system. The overhead roll grab unit picks up the rolls horizontally off the floor and carries them to a predetermined location, either on

the same or another floor (see story in July 1960, PULP & PAPER).

"Recomendations for a Modern Finishing Room" were described by R. G. Carter, divisional industrial engineer, Crown Zellerbach, Camas. He covered recent developments in sheet handling and packaging equipment with new concepts of layout. Various layouts and combinations of new and possible future equipment were presented, giving a picture of a sheet finishing room of the future.

The thoughts presented in these three papers pointed out how fast the paper industry is progressing toward mechanization and automation.

The handling of raw materials in process production and finished products has become a science in its own right and coupled with industrial engineering science and everyday economics is enabling mills to increase production with less manpower and reduced waste.

Lower costs per ton of shipped products is the primary watchword. The paper industry has a long way to go to match the steel or automobile industries in the development of automation and mechanization, but the process is well underway.

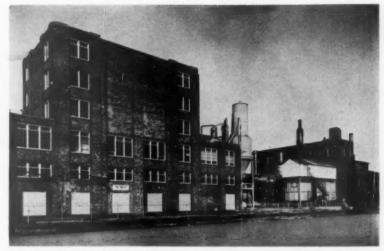
The future should hold some surprises and fantastic developments toward the reduction of costs and waste.



B. C. Kendall

Mr. Kendall, chairman of TAPPI's Industrial Engineering and Materials Handling Committee, also chairmanned this session. He is asst. manager, industrial engineering, Crown Zellerbach Corp., San Francisco, Before moving to San Francisco, he was division industrial engineer for its Western Waxide div.

By-Products from Spent Sulfite Liquor Solids



MORE THAN \$6,000,000 HAS BEEN INVESTED at Puget Sound's Chemical division.

Expansion of Puget Sound Pulp & Timber's chemical by-products facilities raises question of competition with chemical industry

Bellingham, Wash.

• A large addition to chemical byproducts production was brought on
line recently by Puget Sound Pulp &
Timber Co., bringing the firm's investment in by-products to more than \$6,000,000, with an output capacity of

approximately 80,000 tons per year. An extensive program of research and engineering directed at production of useful products from spent sulfite liquor was started by Puget in 1942. In 1945 a plant was built for output of ethyl alcohol by fermentation. (This plant-described in PULP & PAPER, June 1945-remains the only one of its type operating in the United States.) Evaporation, chemical conversion and spray drying units were added in 1946, 1951 and 1958. The new, additional evaporation and spray drving facilities make available another 100,000 lbs. per day of spraydried products originating from spent sulfite liquor solids.

Laboratory and pilot plant facilities have undergone constant increase in size, the last \$300,000 expansion occurring in 1957 (see PULP & PAPER, November 1957).

Planning is now in progress for added facilities.

By-Product Development

In general, production of ethyl alcohol involves liquor collection, sulfur dioxide removal by stripping, fiber removal by screening, cooling liquor to fermentation temperature, acidity adjustment to a pH optimum for the yeast cells, yeast addition with consequent fermentation, and alcohol separation by distillation, followed by concentration and purification of the ethyl alcohol product. A denaturing plant was added in 1950 to provide denatured formulations required by the trade.

Spent liquor residue from the alcohol plant with higher lignin concentrations was used for development of many products now produced by Puget Sound. A small percentage of the material is sold as a simple concentrate, either liquid or spray-dried solid; however, the major market has been for chemical products using sulfite waste liquor as the principal raw material. These products are used in adhesives, cement dispersion, brick manufacturing, oil well drilling, trace element fertilizers, tanning and vanillin manufacture. Several patents issued and others pending have resulted from the firm's extensive research program. Registered trade names now identified with the company's products are Lignosite, Q-Broxin, Fe-Tracin, Multi-Tracin, Bellsol and Bel-

Many attempts have been made over the past 50 years, both in the United States and elsewhere, to establish an industry based on the utilization of lignosulfonates. In general, efforts to produce commercial chemicals from "the other half of the tree" have been discouraging due to the

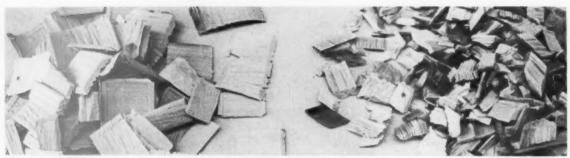
highly competitive nature of the chemical market and competitive availability of other raw materials. Incomplete complex chemistry of the lignosulfonates may also have been a discouraging factor.

Competition with Chemicals

Manufacture of salable by-products is not a ready solution to the waste disposal problem. The by-products market opportunity is extremely small compared to the amount of spent liquor solids available. The products must be tailored to compete successfully against the products of the chemical industry. Intensive research and development are required for each successful product.

By comparison, utilization of sulfite spent liquor by burning, with its accompanied inter-plant recovery of heat and chemicals, is a well-charted course and one being adopted in increasing frequency by sulfite mills throughout the country. As companies adopt the recovery process, it is not likely that these same companies will choose to also invest in expensive research programs to obsolete the high capital cost equipment installed for recovery.

Another factor of possibly even more importance, is that variations in the use of different wood species, pulping methods and grades of pulp produced generally are not compatible with maintaining uniformity in byproducts.



NEW, FLAT CHIPS . . .

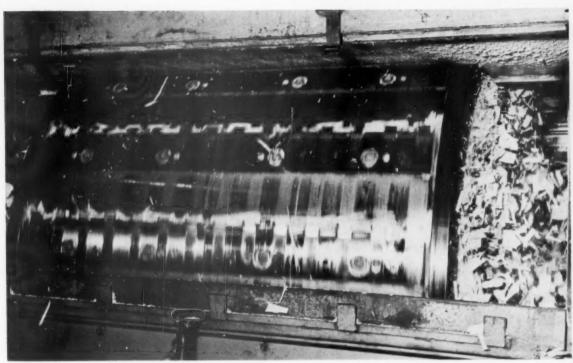
NOT THESE CONVENTIONAL CHIPS . .

TECHNICAL BREAKTHROUGH:

Continuous Drum Chipper Reduces Fiber Damage

- Drum chipper chips parallel to the grain.
- Chips have all same length, same thickness (1/8-in.) within reasonable variation.
- Drum chipper brings out the best in wood.
- There is little or no deformation of the fiber
- Chips have very uniform cross-section.
- Operation of chipper is relatively quiet.
- Screening of chips can be eliminated.
- Chipper literally slices away knots which disappear during the cook.
- Two cutting tools are used; one to cut groove, the other to slab subdivision off.
- Knives are kept at uniform sharpness because two sets of knives are changed periodically.

- Sharpening cycle is about 36 hours.
- There is less variation in degrees of cooking during a batch cook because of uniform thickness of chips.
- High production rate: one unit chips about a cord/minute.
- Can raise permanganate number of pulp without appreciably increasing wood rejects.
- Less horsepower required.
- Chips yield a sulfite pulp of exceptional strength and quality.
- Chip thickness can be changed by adjusting setting of knives in holders.
- Knives are easy to get at for changing.
- Pulp from these chips approach kraft pulps in strength.
- Chip penetration time is decreased drastically.



UNDAMAGED CHIPS TUMBLE at rate of one cord a minute from inside of drum chipper.

By MAURICE R. CASTAGNE Eastern Editor, PULP & PAPER

• A major technical breakthrough in chipping has been achieved by Anglo Canadian Pulp & Paper Mills, Ltd. and Gaspesia Sulphite Co. A chipper of radically new design is now in commercial operation at these two mills producing substantially undamaged wood chips of uniform thickness and with minimum compression.

"Bleached and unbleached sulfite pulps from these chips have exceptional strength," says Anglo. "In fact, these chips produce a pulp of comparable quality as obtained from handmade chips. We believe the new chipper may help revive the sulfite pulp industry. However, further development work is needed before we know that the process will be an economic success."

The cutting action of the chipper is parallel to the fiber grain and opens up the chip to provide an area for greater liquor penetration. The drum chipper basically consists of a main lateral blade and a number of channel-type or groove-type cutting tools spaced equidistantly on the front side of the main or slab blade. The chipper produces chips about %-in. thick, although chip thickness can be varied

at will over a wide range. Logs are held lengthwise on the drum surface and the chips fall inside the drum and tumble out at both ends onto a belt conveyor.

Basically, log feed is the same as to a magazine-type grinder except that instead of a grinding stone being at the bottom of the magazine, there is the drum chipper.

Because chip damage is more of a critical factor in sulfite pulping than in kraft pulping, the drum chipper has particular significance to sulfite. For more than 20 years sulfite pulping experts have studied chip damage to wood and have coined the concept of "acid susceptibility" to explain the effect of wood damage on pulp strength. It is this wood damage, they explain, which is partly responsible for lower strength of sulfite pulps compared to krafts.

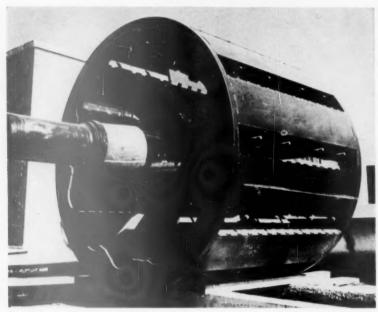
Fundamental work on this subject has been done by Dr. F. H. Yorston at the Pulp and Paper Research Institute of Canada and showed the need for some type of chipper which would not damage the fibers. These studies have shown that crushing of the fiber takes place in chipping with damage limited to one end of the chips and that the effect of crushing wood resulted in more than a 20% loss in ten-

sile strength. More recent studies at the PPRIC with an electron scanning microscope have shown pronounced buckling and distortion of the fiber wall in the damaged portion of the chips.

Anglo Paper Product's research team began work on chipper damage about ten years ago and investigated the possibility of improving chip quality. Because of its concern with chip damage the mills gave full backing to this research, which gave rise to the basic idea of the new chipping process. An important factor was the supply of money once the company got behind the project and pushed it. With full management cooperation the project mushroomed into high gear and everyone at the mills seemed to be aware of the problem all at once. At this point, it was inevitable that the project should develop into a commercial machine. It did.

Anglo reasoned that by using the relatively low tensile strength of wood at right angle to the direction of the fiber axis—that is, by splitting the log longitudinally—markedly improved pulps could be made from such chips. The idea of a drum chipper with different cutting edges mounted on the drum face to cut the log parallel to the fiber direction was soon born.

... continuous drum chipper reduces fiber damage



DRUM SHELL OF NEW CHIPPER shows slots on drum periphery where knife assemblies are mounted. Note spider arms which extend radially from hub of shell.

How Drum Chipper Works

Basically, a groove is first cut in the log by the tapered wing knife and the land areas that remain are slabbed away by the back knife. Compression of the chips, says Anglo, is within the elastic properties of the wood. There is minimum deformation in the fiber direction. Action of the wing knife is such that as it cuts the groove, the wood opens ahead of the knife. The action may be compared to veneer cutting except that the pulpwood log is held while the knife turns.

Two commercial drum chippers have been in operation since the latter part of 1959. There is a 30 cord/hour chipper at the Gaspesia Sulphite Co., Ltd., Chandler, Quebec mill which handles about 500 cords/day. At Anglo's Quebec City mill there is a larger 45 cords/hour chipper which handles about 900 cords/day.

The Quebec City chipper has a 56-in. drum face and is 72 in. in diameter. There are 18 knife positions or slots on the drum face. This unit chips about 4,000 lbs. of chips/minute at 37½ rpm and is powered by a 300 hp motor. It chips directly to the mill's eight 7500 cu. ft. digesters.

The Chandler chipper is a 12-knife assembly, powered by a 200 hp motor and sends its chips to storage bins.

The drum shell is reinforced by spider arms extending radially and outwardly from the hub.

High Knife Life

It is noteworthy that knife condition is uniform throughout the continuous sharpening cycle. This is because two knife assemblies are changed every two digesters. The sharpening cycle is about 36 hours. It takes about 10 minutes to change one of the 120 lb. knife mounts. Handling of the knives is safer than handling conventional chipper knives, says Anglo. The back or slab knife is sharpened on a conventional knife grinder; the wing knife, on a special grinding gig developed at Anglo.

Higher initial knife costs is a possible disadvantage at present (about 200% higher) but Anglo expects to lower it to 125% soon. Savings in this direction are now in sight. Anglo reports that knife costs per ton of pulp are slightly higher than for conventional chippers.

Log Feed

Logs are fed continuously from a rubber belt conveyor to a 12-ft. high magazine type feeder above the drum. A pair of traveling chains on two sides of the magazine forces the logs down to the drum face. The chains are driven by a pressure oil drive with variable volume but constant pressure. The logs are sliced by the knives as they come in contact with the drum. Knots are sliced so thin that they disappear during the cook.

Operation of the chipper is continuous and relatively quiet. Normal conversational tones can be carried alongside the chipper while it is operating.

Chip Handling and Screening

Chip quality is such that chip screening has been eliminated at both

		UNBLEACHED PULP	BLEACHEI PULP
Burst Factor	New Chips	68.5	62.5
	Regular Chips	60.0	55.0
Fold	New Chips	1200	900
	Regular Chips	900	660
Tear Factor	New Chips	0.65	0.73
	Regular Chips	0.60	0.70
G.E. Brightness	New Chips	59.8	91.4
	Regular Chips	56.5	90.0

COMPARISON OF PROPERTIES of commercial unbleached and bleached sulfite pulps from regular and new chips.

mills. Because the drum chipper produces very uniform chips, there is less wood loss, as liquor penetration is complete, and the only knotter screen rejects are the uncooked chips from the bark-damaged cambium layer.

Chip handling would be a materials handling problem for mills designed to handle conventional chips, but would not be a problem for a mill putting in a new chip handling system. The handling problem comes from the shape effects of the chips which interleave and form a stable non-flowing mass.

Chip bin storage has presented some problems because the chips tend to interleave, forming an arch or bridge, but this problem has been solved at the Gaspesia mill to a reasonable extent. Chips are handled at this mill from modified chip bins with only one extra man required.

Pulping Characteristics

There is less variation in degrees of cooking during a batch cook due to uniform chip size. Pulp quality therefore is more uniform. As a result of improved penetration it has been possible to raise appreciably the permanganate number of the pulp without increasing screening rejects.

Laboratory studies show that as time to reach maximum cooking temperature is reduced from three hours to one hour, the amount of screening from regular chips increases 3 to 7.5% while that from the new chips of uni-



TYPICAL SCREENING LOSSES for regular and flat-type chips at a 250 tpd



PERCENTAGE STRENGTH RETENTION for laboratory and commercial pulps from regular and new chips (strength of laboratory pulp from hand-cut chips is taken as 100).

form cross-section remains unchanged at a level of about 2%. This value of 2%, explains Anglo, represents the amount of bark-damaged cambium layer that was not completely delignified during the low pH calcium-base cook.

New Chip Possibilities

Because the Chandler and Quebec City mills are deeply involved in sulfite pulping, they have not investigated thoroughly drum chipping for kraft, continuous pulping, semichemical and hardwood pulping. But these are possibilities. An interesting question would be the effect of the drum chipper upon the groundwood-fromchips process.

It is obvious that uniform chip size and thickness would speed up penetration time with most pulping processes. Anglo strongly stresses that it has only "chipped" at the surface of possibilities for its new chipper.

The project was under the direction of the Research and Development Group of Anglo Paper Products and the design of the chipper was made by the General Engineering Dept. of Anglo Canadian Pulp & Paper Mills Ltd.

LOG FEED IS SIMILAR to log feed of magazine type grinder. It is important that logs are lined up with their axis parallel to that of the drum.

PULP & PAPER Thanks

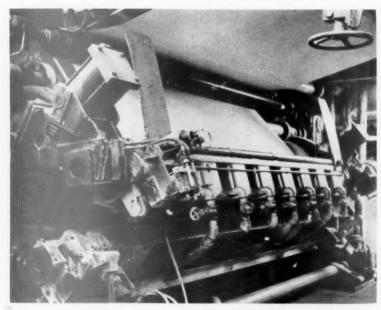
Considerable thanks are due to members of Anglo Paper Products Ltd., The Anglo Canadian Pulp and Paper Mills, Ltd. and to Gaspesia Sulphite Co., Ltd., who helped PULP & PAPER prepare this report. Complete cooperation was given to this publication during visits to Gaspesia's Chandler, Quebec mill and to Anglo's Quebec City mill.

Off-Machine Blade Coating at IP



OFF-MACHINE TRAILING BLADE COATER at IP Otis mill has two trailing blade coating heads, high velocity jet dryers, flying splicer.

Publication grades from 40 to 50 lb. are produced with good printing qualities at speeds ranging to 2000 fpm



COATING HEAD of No. 1 coater. Coating is distributed into manifold by eight downspouts. Overflow is recirculated and re-screened. Recirculating lines are at bottom of manifold.

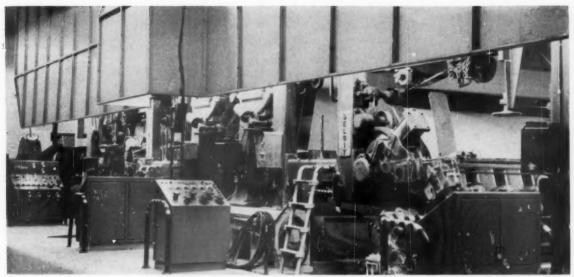
• International Paper Co. has installed an off-machine coater with a trailing blade unit at the Otis mill at Livermore Falls, Maine. Similar units are in operation at three other IP mills at Moss Point, Miss., and the Louisiana and Bastrop mills, both of which are in Bastrop, La.

The Otis mill is one of the original mills of the IP group. It produces groundwood specialties on seven paper machines including one cylinder machine. Base stock for the coater is made on two 153 in. wide Four-driniers.

The Coater

The 90-ft. long coater is 142-in. wide and trims 138 in. It is a Beloit unit equipped with Ross high velocity dryers and Ross dryer hood. Coating speeds on this unit average 1750 to 1800 fpm, with coating speeds possible up to 2000 fpm.

From the Fourdriniers, paper rolls are delivered to the coater by an automatic Detroit hoist. A second crane positions the roll on the splicer and after the splice has been made, a third crane places the roll on the



WEB TRAVEL from second coater can be seen at right. Coater produces publication grades for Otis mill, also has produced experimentally coated Southern kraft.

machine. For splicing material, International uses a combination of 1-in. wide pressure-sensitive tape, backed with glue.

The Beloit flying splicer is a modification of a Kohler design and makes splices at all speeds. Each splicer has a true-tension air operated brake. A General Electric speed indicator instrument shows the relative speed of the new roll in relation to the speed of the paper.

The Ross high velocity-air dryers are used after each coater. Coating blades are .012-in. thick and 3-in. wide. Eight downspouts on each coating head put coating into the nip.

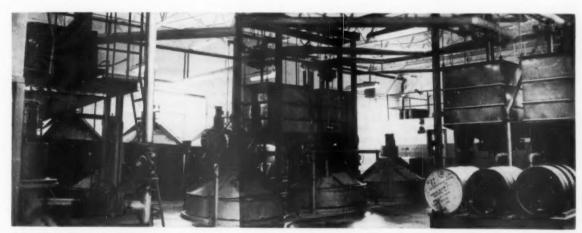
Coating Preparation

The coating preparation plant at Livermore Falls is essentially a duplicate of the one at IP's Hudson River mill. The plant is run by one operator per shift.

A Fuller Airveyor unloads clay from hopper cars at the rate of about 10 to 11 tons an hour. A screw conveyor moves clay to either storage or to the 75 ton capacity clay tanks. A distribution manifold channels clay to No. 2 slurry tank for 12 hours holding time, then to the 120 to 150 mesh Ty-Rocket screens and into No. 1 tank. Here it is kept under constant agitation at about 70 to 72% solids.

Testing

Clay, together with other coating ingredients, is pumped through weighing tanks into stainless steel blenders. The contents of all blenders, before they are discharged to the coater supply tanks, pass through a battery of tests. Since an accurate total solids distributions is needed, International Paper uses infrared heated ovens to determine total solids. A Brookfield viscometer is used for control work to determine thixotropic and dilatant coatings. A small pH meter and Hercules high shear viscometer are also used. Tests take about 20 minutes.



COATING PREPARATION plant. In left foreground is one of two starch blenders. Starch cookers are at left rear. In center are weighing hoppers and blenders for clay, starch, etc. At right are chests for such ingredients as ammonia, latex and pigments.



ATTRACTIVE MILL BUILDINGS use materials produced by other MacMillan, Bloedel and Powell River plants.

Pioneer Fine Papermaking in B.C.

Island Paper Mill is "first" fine paper mill in Western Canada; uses batch programming of stock, new vacuum system

By LOUIS H. BLACKERBY Western Editor, PULP & PAPER

• Start-up of the first fine paper mill in Western Canada has brought increased North American interest in fine paper production. Island Paper Mills, a new industry name, owned and operated by MacMillan Bloedel & Powell River Co., is now in production. Its ultra-modern plant provides growing Western Canada with home-produced bond, writing, mimeo, duplicator, tablet, envelope, book and offset papers.

MB&PR, with gross sales expected to total more than \$250 million in 1960, is one of the world's largest integrated forest industry corporations. The fine paper mill is its latest step in diversification. Company's products include lumber, shingles, plywood, doors, kraft and sulfite pulp and paper, newsprint, paperboard, flakeboard and now fine paper. Mills are located at Vancouver, Port Alberni, Powell River, Harmac, Chemainus, New Westminster.

Although this region's fine paper consumption is difficult to determine"no one has more than a guess," one industry observer stated, it is about double the 70-ton daily capacity of the Island Paper plant. On the basis of total Canadian fine paper production, about 250,000-tons per year, it's estimated the four western provinces consume over 30,000 tons/year.

Industry leaders in Western Canada have considerable doubt that another fine paper mill will be built here within the next few years. The market has not grown fast enough to make construction of another mill likely. MB&PR still has to do some pioneering to compete with eastern Canada and U.S. producers of fine paper.

Among the factors influencing decisions for increasing or not increasing the industry's capacity for manufacturing fine papers are tariffs. There has been much discussion about lowering tariffs on fine papers produced in U.S. The Canadian producers contend their market, in comparison to markets of U.S. producers, is limited; that their mills have had to diversify to an extent that fine paper production is justifiable only through tariff protection. Canadian mill men say that if

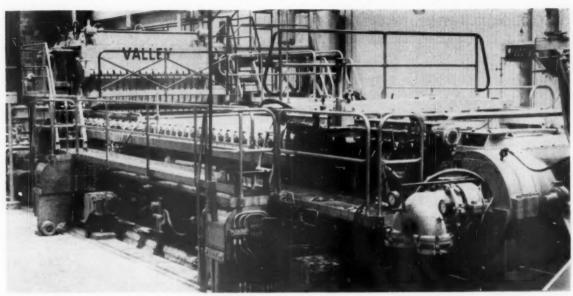
this were now eliminated they would be "at the mercy of bigger U.S. producers capable of producing at lower cost and selling at lower prices because of their mass production and larger markets. The Canadian fine paper companies would be at a disadvantage in the U.S. market because of their costly diversification and small-scale production."

Island Paper Mills, south of New Westminster, B.C. on Annacis Island, is the fulfillment of a plan conceived in 1958 by Powell River Co., which later merged with MacMillan & Bloedel Ltd. The Sandwell & Co. engineering firm was consultant.

Potentials for increasing capacity were included in designing the present single-machine mill as indicated by provisions in the plant structure which will facilitate the addition of a second machine.

Emphasis on Instrumentation

This new mill is compact and impressively modern. It embraces some of the latest developments in process equipment and interior color décornot usually found in industrial plants.



STOCK FLOWS TO REMOVABLE FOURDRINIER section of Dominion machine from Valley air-loaded headbox.

Harmonious interior colors combine with high-level lighting for safe, pleasant working conditions. Westinghouse color-corrected mercury vapor lamps provide 55 foot-candle lighting for production areas, 35 fc elsewhere.

Dry pulp arrives at the plant in baled form and is metered to a conveyor feeding a Turboflex 2,000 lb. capacity batch pulper receiving water from an overhead measuring tank. From the Turboflex, stock is pumped into one of two Hydrocycle tanks for cycling through Jones Fibremaster conical refiners. Refined stock flows to the machine chest, then through a DeZurik consistency controller to two Jones standard jordans. Jordaned stock passes through another consistency regulator enroute to the fan pump. Beyond this point it flows through a Bauer 3-stage Centri-Cleaner system and to Black-Clawson stainless steel Selectifier screens to the machine.

All phases of the stock preparation system are controlled, timed and recorded at a central control panel where a time-quantity schedule can be programmed for each batch. Clay can be added dry at the pulper or as a solution in the headbox system. According to E. N. Walton, MB&PR development engineer, "Every effort was made, keeping in mind the size of the operation, for an automated and well instrumented set-up."

Paper Machine Features

Several unusual drying and processing components are used on this new paper machine. The entire machine, except for the Valley airloaded headbox, was designed and built by Dominion Engineering Works Ltd.

The fully removable shaking Fourdrinier has a 95-ft. long by 120-in. wide wire and uses the Dominion patented torsion bar suspension which eliminates conventional support springs. It is mounted entirely on rubber bushings which require no maintenance.

The flat boxes are oscillated by two hydraulic motors which provide oscillation through eccentrics so positioned that a "figure eight" movement of each box is accomplished. The boxes are in groups of three and four. The third flat box is followed by a table roll above which is positioned the driven dandy roll.

The breast roll and shake rails are separately oscillated by two individual-speed-controlled synchronized shake units. The shake units can be adjusted on the run for stroke length. Rate of shake is controlled by the variable-speed drive motor which powers the shake units. Due to the preloaded torsion bars supporting the shake rails and the breast roll, there is a very smooth shake, with little power required.

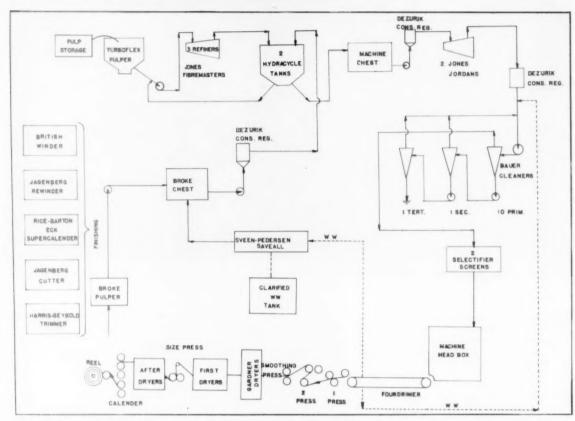
The Fourdrinier run-out mechanism is unusual in that no tail beams or aisle stands are used. There are two hydraulically driven power stands on the front soleplates and two idler roller stands on the rear soleplates.

Front ends of the runner beams have support stands with four rollers on each stand; two above and below a specially designed runout soleplate located in the tending aisle. When the Fourdrinier rolls out, the runner beams come off the rear stands to act as rolling cantilevers using an upward force in the aisle soleplates to balance the weight of the Fourdrinier. When the center of gravity of the Fourdrinier passes the front roller stand, the upper rollers on the front supports take over part of the weight and help support the Fourdrinier while it is in the aisle.

The 30-in, diameter couch is front open-ended, direct-driven cantilevered and has been drilled with the Dominion "silent drilling pattern." The two-compartment suction box has variable slot widths for best operating conditions. Large high capacity self-aligning roller bearings are used to give long trouble-free service. A 30-in. diameter presser roll is mounted on pivoting arms hydraulically moved for nip pressure control. A helper drive brings the roll up to speed before lowering it onto the wire.

A separate wire-changing rig is preloaded with the new wire and the wire poles and can be lifted by the machine room crane. When changing, the wire is looped around the couch. The crane lowers the wire draping rig onto the couch and swing bolts hold it in place. The crane picks up the wire pole bundle and as it moves toward the headbox the wire is paid out at the desired rate from the unwinding chucks and wire poles are posi-tioned in their places. When the poles are in position and the wire is correctly tensioned, the Fourdrinier is rolled back into operating position and the wire poles removed. Breast roll and forming board are swung back

. . . Fine paper mill in Western Canada



SIMPLIFIED DIAGRAM shows stock flow from pulp storage to finishing operations.

into position and locked in place and no further alignment is needed.

A straight-through first suction press, a second reversing suction press and a straight-through set of smoothing rolls comprise the press section. A ring-marking roll is also used. Two front open-ended suction press rolls permit easy access to the suction boxes because of this construction.

Vacuum Requirements

A three-stage Sulzer Bros. vacuum blower, with an elaborate system of water separators, supplies vacuum needs. The hot, dry air produced by the vacuum blowers is fed into the paper machine Ross-Grewin system or to the felt drying system, thus using some of the energy driving the blowers. According to Mr. Walton, the system's power use is "fairly low." This is reportedly the second such installation in North America, although such units are widely used in Europe.

Three-Section Dryers

All dryers are 5-ft. diameter, rated at 50 psig and are driven by open gears. Special spacing has been provided for the installation of high velocity hoods for the first four dryers and first four size dryers. At present, Rice Barton Gardner high velocity dryer 160° hoods are mounted on the first two main dryers. Low-volume high-velocity air is heated by gasfired burners and can be applied at temperatures up to 600°F.

All dryers are mounted on selfaligning antifriction roller bearings lubricated by a central pressure lubrication system. The open dryer framing, of heavy box section cast iron permits easy access to the felt and paper runs.

The horizontal size press after the main dryers is hydraulically operated. The bottom roll is rubber covered and the "top" roll is bronze covered. Size press rolls and the smoothing rolls are interchangeable.

All rolls on the 10-roll calender stack are chilled cast iron. Oil hydraulic loading of the calender stack gives the highest possible nip pressure. Air operated doctors are supported from the calender frames.

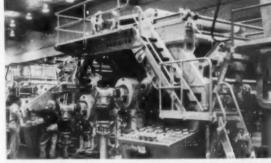
The Dominion constant tension reel uses hydraulics extensively for loading and transferring operations. There is oil hydraulic primary loading on the transfer arms pivoted by a separate pair of hydraulic cylinders. Secondary carriages are also hydraulically powered. A double wheel reel bar starter brings the reel bar up to speed before it is lowered onto the reel and the transfer is made. When the reel bars have been released from the transfer arms, these arms automatically return to vertical position and an empty reel bar can be loaded into them. When the reel reaches the required size, a new reel is started and the reel of paper is carried by secondary carriages to the extreme dry end of the reel where brake shoes contact the ends of the reel bar and brake the reel to a stop.

Machine Drive

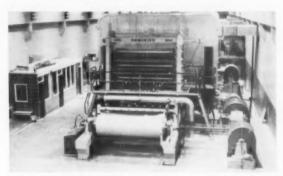
The entire paper machine from couch to reel is driven by a Westing-house 500 hp steam turbine powering a lineshaft in the basement. Cone pulleys and plastic cored belting



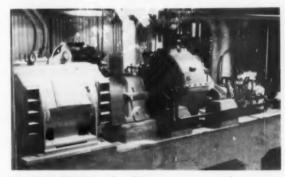
COMPACT STOCK PREPARATION uses (1 to r) Jones jordans, 3-stage Centri-Cleaners, Selectifier screens.



PRESS SECTION has straight-through first suction press, second reversing suction press and straight-through smoothing rolls.



TEN-ROLL CALENDER STACK boasts chilled iron rolls. Machine hood totally encloses dryers.



DUAL PURPOSE Sulzer blower system provides vacuum for wet end, warm air for dryer section.

transmit power by airflex clutches to the right angle spiral bevel gear units. Dominion Solid and Gearflex couplings are used throughout the lineshaft, and floating shaft type Dominion Gearflex couplings are used at indrive points.

The normal setup is a split cone pulley on the lineshaft, a solid rim cone pulley on the high speed unit shaft driving through an airflex clutch to the Dominion spiral bevel gear box.

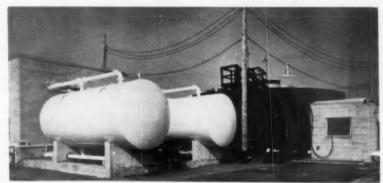
The calendar also has a reversing drive for use when rolls get badly jammed with wads of paper. In this case the output shaft from the spiral bevel unit is coupled to one shaft of a Dominion double reduction unit. This shaft drives the calender. The reversing gear motor and airflex clutch is coupled to the shaft on the opposite end of the double reduction gear unit.

A Stamm moisture-condensate control system, the machine dryer section, has three operational sections:
(a) a separate pressure control for the Gardner dryers, (b) a 21-dryer pre-size section of 7-dryer condensing section and 14 dryers and felts subject to moisture control, c) after-size section, in which 4 top and 4 bottom dryers, and their felt dryers, are separately moisture controlled for fully flexible operation.

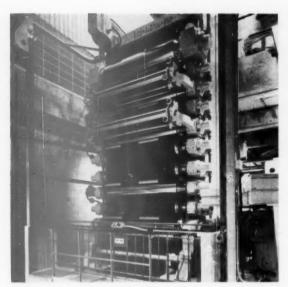
This Stamm system includes two pilot dryers, one ahead of the size press and one ahead of the reel, controlled at constant pressure so changes in average sheet moisture effect modification of steam flow to the pilot dryers. The resultant change of steam flow, in turn, forces the moisture control unit to change pressure in the section header.

Although finishing operations were equipped with but a minimum of processing equipment, this department is highly automated to achieve low production cost. Production facilities include a Masson-Scott British Winders winder; Jagenberg 3300 fpm rewinder; Rice Barton-Eck 10-roll supercalender with Bepco drive; 600 fpm Jagenberg Simplex sheet cutter with mounting layboy, ream counter and marker with overlapping delivery; Harris-Seybold automatic space trimmer; vacuum packaging unit by Southworth Machine Co., and Vacuumatic sheet counter.

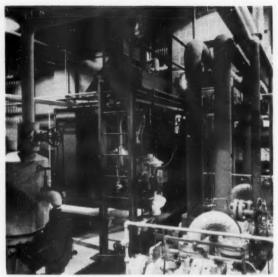
The Jagenberg sheet cutter is trackmounted to serve two backstands. The



WATER PROBLEMS WERE SOLVED by floccing-coagulation-filtering system of Northwest Filter Co. Problems involved varying color and turbidity.



FINISHING SECTION includes one of first Rice-Barton-Eck supercalenders installed on West Coast.



STEAM IS GENERATED by Babcock Wilcox & Goldie McCulloch 30,000 lb./hr. package water-tube boiler.

Rice Barton-Jos. Eck & Söhne supercalender is one of the first of these European units installed on the West Coast

Cleaning River Water

Water for the fine paper mill is obtained from the Fraser River, an inexhaustible source but subject to problems such as tidal variation, saltwater intrusion, dirt, and enormous debris during flood season. A "tongue" of salt water forced upstream beneath the river at high tide literally lifts the river. Although this intrusion remains many feet below the river surface at the mill location, the engineering staff

decided that the water for plant use should be obtained from the top layer of the river.

A floating open-bottom steel barge was designed to support the suction end of the intake pipes. An elaborate piling system holds this unit in position and protects it from freshet debris. Pipes extend from the barge to a shore-based pumping station.

Fraser River water is normally quite muddy and has a "fair degree" of color. At times there is extreme turbidity, carrying fine glacial silt of low color. Water for the mill is processed in a Northwest Filter Co. treatment plant basically consisting of a floccing-coagulation-filtering system.

Fundamentally the treating is that of chemical mixing and coagulation which Northwest terms "hydraulic mass mixing." The plant has a circular mixing and coagulation section at the center with settling section around the perimeter. There is no mechanical mixing action. Enough retention time is allowed to permit settling out of the floc and decanting of the clear water. From the settling basin, water flows to gravity sand filters. Backwashing is carried out whenever needed. After filtering, the water is clearwell stored for pumping to the mill as required.

Heading Fine Paper Operations at Island Paper



MacLaurin



Lachance



Hughes



Webb



Brooks

D. J. MacLaurin, manager of mill, is Institute of Paper Chemistry graduate and was gen. supt.-tech. dir. of Gilbert Paper Co. K. E. Lachance, production mgr. is a chem. engr. graduate of Queens University, joined E. B. Eddy Co. in 1957 and was supt. of production standards and methods there, prior to joining Island Paper in 1960. F. P. Hughes, technical director, was a senior scientist with Marathon Research at Rothschild, Wis. He has also been with KVP at Espanola and Sorg in Ohio; originally came to Canada in 1951 after graduating from London University. H. J. Webb, office manager, joined Powell River accounting dept. nine years ago. Dwight F. Brooks, sales manager, began his paper industry experience at Powell River and was later with Northwest Paper Co.

Construction Factors

Site location for the new plant involved considerable study and testing. By mid-1959 it was apparent piling would be required for the machine room and other heavy foundations. Because the water table fluctuated over a range of several feet, following the river elevations, either creosoted or concrete piling had to be used. Franki piling was chosen, Provision was made in driving the piling (and in column design) for subsequent construction of machine and finishing room.

The buildings were designed for minimum cost consistent with easy maintenance. The 2-story machine room is 50 ft. wide, 50 ft. high and 380 ft. long. It has reinforced concrete columns, beams and floor slabs. Finishing and storage areas are housed in single-story 100 x 20 x 240 ft. buildings on spread footings. Western red cedar, from MB&PR sawmills, was used for roof decking and vertical exterior siding.

Laminated timber beams, bridgetype components built by American Fabricators Ltd., coated with clear sealer were used extensively and provide a pleasing appearance. A combination of enamel-aluminum siding and a 6 ft. high wall of Spectra Glaze blocks provide attractive interior siding. These blocks, made of light weight aggregate, are faced with ¼ in. layer of colored resin-bonded silica sand.

Equipment Notes

Paper machine—Dominion Engineering Works, Ltd.

Three Jones Fibremaster refiners with Accru-Set control; two Jones "Standard" jordans; one 14 ft. Turboflex batch pulper of 2000 lbs. capacity; two Hydracycle tanks; one Jones continuous Brokemaster with 2 low-speed rotors; one machine chest agitator Cartridge horizontal urit, four 48 in. adjustable pitch blades; one broke tank agitator vertical adjustable pitch three 60 in. diameter blades; Sveen Pedersen flotation white water saveall 700 gpm with Aqua Air Spray aeration tank—all supplied by Alexander Fleck Ltd.

Couch pit agitator horizontal woodless adjustable blades — Sherbrooke Machineries Ltd.

Three stage Centri-Cleaner system (10 No. 623 primary, one No. 623 secondary, one No. 606 tertiary) with vacuum reject system—Bauer Bros. Co.

Two Selectifier screens stainless steel No. 24-P-Black-Clawson (Canada) Ltd. Airloaded 3-pass headbox-Valley Iron Works Co.

Vacuum systems, two Turbair blowers with 300 hp motors, extraction pumps, drop separators, 390 lbs. air/min. at 300°F—Sulzer Brothers Ltd.

Two 60 in. Gardner dryer shrouds--Rice Barton Corp.

Paper machine ventilating system insu-

lated aluminum open-type hood and high velocity air jet nozzles; calender cooling— Ross Engineering of Canada Ltd.

Steam control and dryer drainage with moisture control—Stamm Drying Controls Ltd.

Machine line shaft drive Westinghouse type E125 steam turbine 500 hp psig at 750° inlet and 50 psig outlet—Canadian Westinghouse Co. Ltd.

Paper trimmer 100 in. fully-automatic mill spacer trimmer-Harris Seybold Co.

Supercalender 10-roll 64 in. face Rice Barton-Eck open-sided model RCH-Rice Barton Corp.

Jagenberg Simplex sheet cutter with mounting layboy, ream counter and marker, overlapping delivery; Jagenberg rewinder type 35, 72 in. width up to 3300 fm—F. Drexel Co. Ltd.

Steam boiler 30,000 lbs./hr. water tube package steam generator type FMD9-61, 400 psig at 750°F natural gas, furnace oil standby, semioutdoor—Babcock & Wilcox & Goldie McCulloch Ltd.

One 3750 kva, 1200 kva/460/Y/265 volt indoor substation with HV and LA switchgear—Federal Pacific Electrical Ltd.

Motor control centers, Type A, Class 1-Canadian General Electric.

Structural piling 120 tons Franki piles, 16-6 in. minimum length—Franki of Canada Ltd.

Swedish Pulp Industry Schedules Capacity Increase of 1.5 Million Tons in 4 Years

A new revised report on the development of capacity by the Swedish pulp industry has been conducted by the Swedish Cellulose Association and Swedish Wood Pulp Association.

This survey has now been completed and the indications are thatafter an increase in capacity of 200,-000 tons this year-the total annual capacity at the end of 1960 will be 4.2 million tons of chemical pulp, 70,000 tons of semi-chemical pulp and 1,380,000 tons of mechanical pulp. This makes a total of 5.6 million tons. During the four years 1961-1964, total capacity will be increased by around 1.5 million tons so that, by the end of the period, total output will have risen to some 7.1 million tonsthat is. 5.5 million tons of cellulose, 100,000 tons of semi-chemical pulp and 1.5 million tons of mechanical

According to the new survey, total

capacity will have reached 6.8 million tons by 1963, as compared with the 6.4 million tons in the 1958 assessment. This increase is due mainly to new projects announced since 1958.

Of the total increase in capacity of 1.5 million tons for the period 1961-1964, about 950,000 tons, or nearly 65%, is intended for production of market pulp, while the remaining 550,000 tons will probably be used for the integrated manufacture of paper and paperboard.

By the end of 1960, production capacity of chemical pulp for sale will be 3.05 million tons, and the corresponding figure for mechanical pulp will be 630,000 tons. At the end of the period under review—that is, at the end of 1964—it is expected that the figures will be about 3.9 million tons of chemical pulp—an increase of 35,000 tons—and 680,000 tons of mechanical pulp—is rise of 50,000 tons.

Foote Bros. and David Brown Form Joint Ventures in Canada

In joint ventures in the U.S. and Canada, Foote Bros. Gear and Machine Corp., Chicago, and The David Brown Corp. Ltd., London, have established a jointly-owned sales subsidiary in Canada. The new firm, David Brown-Foote Gears, Ltd., will take over sales and distribution in Canada of gear products manufactured by both companies, plus products of The Whitney Chain Co. division of Foote Bros. David Brown-Foote Gears, Ltd. will occupy a 15,000 square ft. headquarters building at 26 Howden Road, Scarborough, suburb of Toronto, jointly on a 50-50 basis by Brown and Foote.

Foote Bros. has asquired David Brown, Inc., San Leandro, Calif., subsidiary of David Brown Corp. Ltd. It will market Brown and Foote products in the West. Foote Bros. has been designated exclusive distributors in the U. S. for David Brown Industries

of England.



THERE WERE 140 DELEGATES AT THE TOKYO U.N. CONFERENCE on Asia's future paper requirements. Seated at the head table (left to right) are: C. KANCHNAGOM, ECAFE; G. S. WELSH, FAO; J. B. SINGH, chief, Industries Division, ECAFE; U. NUYN, executive secretary, ECAFE; M. ISHII, Minister of International Trade and Industry, Japan; EGON GLESINGER, director, Forestry and Forest Products Division of FAO, Rome, ARNE SUNDELIN, Co-Director of Conference, FAO Forestry & Forest Products Division; J. C. WESTOBY, chief, Forest Economic Branch, FAO Forestry and Forest Products Division, and T. NAKAMURA, Conference Officer, Japan.

Asia's Needs Faced in Tokyo

U.N. delegates told raw materials must be found and mills must be built in East which lacks exchange for paper imports

By MOTOKI MATSUNAGA
PULP & PAPER Editor for Japan

■ Tokyo
■ Many of the government and industry leaders who participated in the United Nations-sponsored Conference on Pulp and Paper Development in Asia and the Far East, held here Oct. 7 to Oct. 31 are convinced that this meeting accomplished what it set out to do. That was to contribute to the development of paper making resources and technology in this part of the world.

About 80 papers were presented to this unusual conference and the total consumption of printing and writing paper during the meetings amounted to 80,000 sheets! That is certainly good for the paper industry! Never has there been any international conference held in Japan which consumed such a large quantity of paper.

There were 140 delegates in attendance. These were government officials, association executives, technical leaders and manufacturing executives. They came from India, Pakistan, Burma, Japan, South Korea, Cambodia, Taiwan, Indonesia, the Philippines, Thailand, Viet-Nam, and Malaya Federation. There were also leaders in these fields from the U.S.A., Canada, Australia, New Zealand, Mexico, Britain, France, West Germany, Sweden, Finland, Argentina, Chile, Czechoslovakia, Dominican Republic, Italy, Norway, Soviet Russia, and Switzerland.

The expectation of rapidly rising needs for paper and paperboard in Asia and the Far East caused the two U.N. sponsoring bodies to call this meeting. These were the Economic Commission of Asia and the Far East (ECAFE) and the Food and Agriculture Organization (FAO), with the Forestry and Forest Products Division of FAO in Rome taking a leading role in planning.

Requirements by 1975

The conference discussed the availability of raw materials-wood, bamboo, bagasse, straw and other indigenous fibers. Total needs in the Far East (excluding Mainland China) by 1975 were estimated as over 32 million cubic meters of wood, 1.8 million tons of bagasse, also 1.8 million tons of bamboo and more than one million tons of straw and grasses. In Oceania, the requirements by 1975 were estimated as 3.8 million cubic meters of wood. A four-fold increase in paper and paperboard requirements for the Far East (excluding Mainland China) and a doubling of needs in Oceania were predicted.

The Japanese delegate, Y. Ichikawa, managing director of Honshu Paper Mfg. Co., stressed the phenomenal record of increase of the Japanese pulp and paper industry. He told the conference that the rapid industry growth must be attributed to the steadily increasing growth rate of the

Japanese national economy. The paper demand in Japan, he said, will reach about 6,880,000 metric tons for 1965 and 9,360,000 tons in 1975, which are 32 per cent and 25 per cent higher levels, respectively, as compared with figures estimated in FAO Secretariat reports (World Pulp and Paper Conference on Demand, Supply and Trade, in Rome, 1959. Report of meeting in PULP & PAPER, pages 82-83, Dec. 1959 issue).

How to Satisfy Asia's Wants

The total consumption of paper in Asia is now 6.5 million tons and it is estimated this will rise to 11.5 million tons in five years and by 1975 will reach 25 million tons. Mr. Ichikawa declared "The question now arises: how to supply this?"

It is not reasonable, he said, that this entire rise in demand be supplied by imports from abroad, because this would add about four billion dollars a year to the purchases of Asiatic countries, already suffering from a shortage of foreign currency. Therefore, said Mr. Ichikawa, the supply must come to a considerable extent from within the region.

This speech set the keynote for discussions of principal raw materials available in this region of the world and the sites best suited for establishing mills.

Paper consumption per inhabitant in Asia is 1.5 kilograms (excluding Japan and Mainland China) which compares unfavorably with a world average, according to FAO figures, of 22 kilograms. Consumption of newsprint for the same Asiatic region is very low, only 0.3 kilograms per person. This, delegates said, explained the low level of living conditions and education in the Far East and Asia.

U.S.A. delegates attending the FAO conference were James L. Ritchie, executive director, U.S. Pulp Producers Assn.; Robert E. O'Connor, executive secretary, American Paper & Pulp Assn.; Lawson P. Turcotte, president, Puget Sound Pulp & Timber Co. and Ketchikan Pulp Co.; Howard E. Whitaker, chairman of the board, The Mead Corp., and president of APPA; Donald S. Leslie, president, Hammermill Paper Co. and G. J. Ticoulat, senior vice president, Crown Zellerbach Corp.

Figures presented at the Conference to indicate the magnitude of what were considered as necessary pulp and paper projects (over and above presently implemented projects): For the whole region, excluding Mainland China—\$4,500,000,000 (U.S.) over the next 15 years or about 200 million dollars annually up to 1965 and 350 million dollars annually from 1965 to 1975.

Excluding Japan and Oceania, it was said existing industries could finance much expansion—75 million dollars annually to 1965 and 95 million dollars annually for 1965 to 1975—a total of 1.3 billion dollars to 1975. Substantial foreign capital and government assistance would be required, it was said.

Guest speakers at the meetings in Tokyo's Sankei Kaikan were Dr. Borje Steenberg, head of Paper Technology Dept., Swedish Forest Products Laboratory, who discussed what paper machines of the future may be like (see PULP & PAPER, November 1959 issue, page 87), Arne Asplund, Stockholm, inventor of the Defibrator, used for processing fibrous materials all around the world; Dr. Kazuki Ohno, Osaka University, Japan; P. D. Varaskin, Russia; R. W. Henry, gen-

eral manager, Australia Newsprint Mills; Ed G. Locke and Gardner H. Chidester, U.S. Forest Products Laboratory; U.S.A.; G. J. Ticoulat, senior vice president, Crown Zellerbach Corp., U.S.A.; Sir Herbert Hutchinson, retiring director of British Paper & Board Makers Assn.; Lincoln Thiesmeyer, head of the Pulp & Paper Research Institute of Canada; Frank Mitchell, representing the Canadian association; Dr. Friedrich Dorn, president. Zellstofffabrik Waldhof, Germany; Dr. Hans Giertz, Trondheim University, Norway, and Dr. Horst Niethammer, president, Aschaffen-burger Zellstoffwerta, Germany.

Some delegates considered the most serious problem the lag in newsprint production and its cost effect on newspapers. Because newsprint mills are expensive, it was suggested as a problem a group of Asiatic countries should join in working out.

Delegates mentioned paper dishes and paper clothing are appearing on Asiatic markets and technical development has been surprising. New mills should be modern, they said. Three major sources of supply listed are bamboo forests in Burma, bagasse in South Asia, and existing hardwood forests.

Dr. Egon Glesinger, director of FAO's Forestry and Forest Products Division, said FAO considers "pulp and paper one of its main responsibilities." Production should be extended to more countries, he said. The conference recommended that Asia and the Near East's capacity and demand be kept "under continuous review."

Deficiencies in chemicals for pulp and paper industries, it was said could be made up by imports from America and Europe or exploitation of



DELEGATES TO THE U. N. CONFERENCE were shown exhibits in the Oji Paper Museum. The tall man in middle background is G. J. TICOULAT, senior vice president of Crown Zellerbach Corp. and head of its international division.



UNITED STATES DELEGATES: JAMES L. RITCHIE, executive director, U.S. Pulp Producers Assn., at left, and ROBERT E. O'CONNOR, executive secy.-treas., American Paper and Pulp Assn., at right.

CONFERENCE ON PULP AND PAPER DEVELOPMENT IN ASIA AND FAR EAST

local resources.

Some other needs reviewed included possibilities for training technicians in the Western countries; planting of long fibered trees, which will be a need for proper raw material balance; assistance from existing mills, engineering firms, consultants and machinery manufacturers. FAO and ECAFE will give assistance to projects.

A report by Japan's Waste Paper Association, revealing that recovery in Japan is at the unsually high rate of 34 per cent, proved a basis for much discussion of the possibilities for other Asiatic countries.

Likewise, a report by Isaburo Koji, chief, Saitama Prefectual Paper Industrial Laboratory, on the thriving and well established Japanese hand-made paper industry, stimulated much discussion and other Asiatic governments were asked to assist in establishing or enlarging similar industries in their countries by government-sponsored research and finance.

The potentials for more small scale

mills also came in for much discussion, and it was agreed by the conference that both large and small units are needed.

Takeso Shimoda, Japanese Ministry of Foreign Affairs, was the elected chairman of the conference. Mr. Anondo, secretary-general, Basic Industries Dept., Indonesian government, was elected first vice chairman, and Dr. Mariano P. Ramiro, chief industrial planner, National Economic Council of the Philippines, was elected second vice chairman.

Progress in Bagasse Pulping

Bagasse reported easily pulped and bleached by new process based on complete pitch removal; suitable for wide range of papers

• The promise of using greater quantities of sugar cane bagasse in a wider range of papers such as newsprint, paper toweling, corrugating medium, bond paper and greaseproof paper comes closer to realization with news of a new breakthrough in bagasse pulping. For some eight years, Crown Zellerbach Corp. and the Hawaiian Sugar Planter's Assn. have been trying to develop a method of pulping bagasse which would have advantages other systems did not offer.

Bagasse pulping for papermaking is not new. There have been successful operations in many countries where bagasse has been plentiful. Notable among these successes have been the Paramonga, Peru mill of W. R. Grace, the San Cristobal mill in Mexico using the Cusi process and the 100% newsprint mill of Joaquin de la Roza Sr., in Cuba.

The process developed by Crown Zellerbach and the Hawaiian group is reportedly a technological advance over existing methods for refining and pulping bagasse. In 1958, they reached the point where it was technically feasible to make bagasse paper of better quality than previously produced and the two groups intensified their program.

During the expanded phase of this project, bagasse pulp was made in special pulping and refining equipment at Crown Zellerbach's research laboratory at Camas, Wash., and commercial trial runs of bagasse newsprint

were made at Crown Zellerbach mill operations. The resultant paper was run on modern presses at speeds in excess of 40,000 impressions/hour. No adjustment to the presses was required and the mechanical and printability performance were of commercial quality.

Pilot plant tests were made in Hawaii for depithing bagasse and also studies of outside storage of bagasse under dry and wet weather conditions.

The results of these projects culminated in patented processes which will be used in a \$20 million bagasse newsprint mill in India by Rohtas Industries, Ltd. Crown Zellerbach and Hawaiian Development are making technical assistance and patent rights for production available to Sahu Jain Ltd., Calcutta, managing agency for one of India's largest industrial complexes. The 60,000 ton/year newsprint mill will be built at Karad in Maharashtra State, 220 miles from Bombay.

Advantages of Bagasse

Dr. Walter F. Holzer, manager, technical projects of Crown Zellerbach, explains, "The characteristics which make bagasse fiber useful for papermaking are its fine fibers and high hemicellulose content. These properties ensure that the stock will develop strength rapidly on refining and will form well on the paper machine.

"To take full advantage of the in-

herent characteristics of bagasse fiber, it must be thoroughly depithed. It is desirable to subject the fiber only to temperature and chemical conditions of a minimum cook. This is necessary to preserve the greatest amount of strength and give the highest possible yield.

"Such a pulp handles well on the paper machine. It drains efficiently on the wire and operates satisfactorily on the press section. The finished paper has maximum strength for this fibrous raw material and has the necessary strength properties to meet commercial requirements."

Wood Boxes Forbidden! Must Use Paper in Libya

Tripoli . . . No doubt the paper industries of many other countries will wish they could be as fortunate as those in Libya. For in tois country, it is expressly forbidden to ship fruits in wooden cases.

The construction of a paperboard plant and a fiber box factory is being hastened as a result of this law. Libya's present requirements are three million fiber boxes for fruits. Italy, U.K. and Germany have been principal suppliers of paper needs. There is a very small paper wrapping mill in this city. Libya exports about 20,000 tons annually of esparto grass to Europe for papermaking.



W. FRED DOLKE, A.1.A., ARCHITECT & REGINERS

NEW RESEARCH AND DEVELOPMENT CENTER, two miles from the main plant of Beloit Iron Works, at Beloit, Wisconsin, will provide 45,000 square feet of modern plant and facilities for "paperesearch." Now under construction, the Center will be completed early in the second quarter of 1961. More efficient machines, better paper, new economies—these are key items in Beloit's continuing research and development program.





GOOD HOUSEKEEPING IS ESSENTIAL to any safety program. Says the Winslow safety supervisor: "We have one of the cleanest plants in the pulp and paper industry".



Three Ingredients for Safety

Scott Paper mill recipe calls for equal parts of good equipment; employe know-how, management-labor cooperation

• Plant Personnel Mgr. Thomas N. Karlen and Safety Supervisor James A. Duncan Jr. of Scott Paper Co.'s Winslow, Maine paper and sulfite pulp mill were concerned with the operation of a stacker and fearful it would collapse, showering 4-ft. wood sticks on workers below. They took the problem to George F. Blessing, Northeast div. mgr. for the firm. The conveyor had worn heavily through years of use, and the two men suggested it be condemned and replaced.

In a February sleet storm, Mr. Blessing climbed the 50-ft. high stacker, studied its condition and serviceability and returned with his decision.

"Okay, let's condemn it!"

"This describes," Mr. Karlen said, "better than anything I know, the attitude of our management toward safety."

It was that year-1959-that the Northeast div. plant achieved a 26% drop in its accident frequency rate and an 80% reduction in severity. One million man-hours without a lost-time injury were recorded between July 17 and December 18-for the first time in the plant's history. The new record of 172 days without an injury sur-

Nine Points for Job Safety

In search of this primary target, a nine-point program was initiated to include:

 Intensification of the eye protection program, including a prescription glasses plan.

2. Reemphasis of the use of safety shoes-goal: 100% protection.

3. Improvement of an already good housekeeping program—"we have one of the cleanest plants in the pulp and paper industry," according to Mr. Duncan, "and in most cases safety is related to good housekeeping."

4. Distribution of additional data on hazardous material storage requirements, making it easily available to those who handle these materials so that they will know what the requirements are, so that they can work with the materials safely.

5. Improvement of follow-up on safety work requisitions.

Development of specific department safety studies.

7. Completion of an up-to-date list of safety regulations and additional information every three months.

8. A more complete pipe identification program.

 Continuation of increased safety consciousness, through all in-plant publicity media, special promotions and safety meetings and classes.

... SAFETY

passed the previous mark by 67 days.

As a result, the plant received the National Safety Council's Award of Merit from Gov. John Reed at the Maine Safety Conference in Rockland in September.

Only seven lost-time accidents were reported in 1959, and the accident frequency rate was 2.99.

A Share of Responsibility

Seeking to reduce these figures even more, Mr. Blessing emphasized that every employe is trained and must accept a share of responsibility for his own safety and for the safety of his fellow workers.

"A special responsibility, however, must be accepted by all supervisors and management personnel," he declared. "We must make certain that the plant buildings, equipment and tools are as hazard-free as realistically possible, and that every employe is provided with personal protective equipment and armed with all the latest safety information necessary to preserve him from injury."

Safety Supervisor Duncan said safety committees planned an all-out effort to see that this year's safety mark is even better than that of 1959.

The enthusiasm of the committee members has been generated by management's positive attitude, by a new high of 95% attendance at safety meetings and by last year's safety record.

New signs have been erected in each department to inform employes of the competitive standing of their departments, and to provide a place for posting minutes of safety committee meetings. A blinking green light on the signs indicates an extension of department perfect safety records. In addition, the mill entrance sign shows



FAST ACTION CAN SAVE A LIFE in the event of a chlorine gas leak while hooking up tank car. Here, two men at the Winslow plant are equipped with gas masks fitted with special canisters.

records of all departments—pulp mill, paper mill, finishing, paper handling and services. Earlier this year the "master" record showed the plant had recorded 132 days (the pulp mill was high with 620 days) without a lost-time accident and was enroute to a possible new safety mark.

It marked the second time plant employe had surpassed the 105-day mark established in 1956.

Good Equipment Plus Know-How

Playing an important role in these impressive safety records are what Mr. Blessing described as the "protective equipment and necessary knowledge" to eliminate injury.

Typical is this news item from The Scott Broadcast:

"Winslow-Plant safety has

taken another step forward in the constant fight to reduce industrial injuries. A new oxygen indicator meter has been purchased and a tank-testing procedure developed to insure against worker injury while working in such areas."

The story reviewed accident history in other plants where deaths occurred from lack of overen

from lack of oxygen.

"At Winslow," the story continued,
"all tanks and vessels must be tested
according to local tank safety procedures. Guard sergeants have been
trained both in the principle and operation of the oxygen indicator, which
measures the amount of oxygen in a
specific area."

Tank Safety Stressed

This portable oxygen indicator, made by Mine Safety Appliances Co., has proved particularly useful in checking white water chests in the mill just after they have been drained and a maintenance crew begins flushing away foreign matter that has settled at the tank bottom. Use of the indicator is just one of nine safety steps employed in maintaining all tanks, vessels and digesters at the Scott plant. Safety Supervisor Duncan said reasoning behind the specific procedure is that, "few people realize the differ-ence between life and death from oxygen deficiency falls into a very narrow percentage span. Normal air contains 20.8% oxygen. If the oxygen content in the air drops to 16 % a person can readily become unconscious.

Tests for oxygen deficiency may vary from one to as many as 12 per



REVIEWING WINSLOW'S SAFETY RECORD are (I to r) R. L. Dyer, asst. personnel mgr.; Thomas N. Karlen, plant personnel mgr., and James A. Duncan Jr., safety supervisor.

... SAFETY

day, according to Mr. Duncan. He checks new reports each morning, and they are then placed in an available file for one year.

"We haven't found an atmosphere yet that has been below a level we wouldn't let a man enter," he said, "but it (the portable oxygen indicator) has proved valuable in giving us this information."

Other Danger Areas

Also given close attention at the Winslow pulp and paper plant are all areas where there is danger from carbon monoxide—regardless of how slight. These include the boiler house (coal gases) and all areas where there is possibility of carbon monoxide from automotive engines operating on either gasoline or LP-gas. These sections are examined frequently with a carbon monoxide tester designed to indicate presence and percentage of CO. The test includes an air sample drawn through a replaceable detector tube for colorimetric sampling.

No Eyes, No Work

Protection of eyes against physical or chemical agents, or radiant energies, is another of the essentials in Scott's safety program. To offset these dangers, goggles are required in liquor lines, handling caustic or strong acid, chipping concrete or metals, pouring molten metals, welding and burning, grinding of any type and all other

work where there is danger of foreign substances entering the eyes.

These are just a few examples of the equipment utilized in the safety program at Winslow. Other items include MSA K-type Skullgards in the mill and T-hats in the Woods dept., chemical cartridge respirators, full-face gas masks, Chemox self-contained breathing apparatus, safety belts (always used by a maintenance man in cleaning a tank or vessel), shin and arm guards, a pneolator, rainwear, plastic work gloves, molded rubber gloves, Lamb air-movers (used without employing motors, turbines, or fans), life jackets, salt tablets, toe guards and other miscellaneous equipment.

Equipment Maintenance Vital

But, equipment alone is not enough at this Scott plant. Regular equipment checks are standard operating procedure. For example, there has been little use for a chlorine gas mask just outside the chlorine tank room. However, mounted on the wall alongside an emergency procedure for chlorine leaks, the mask is still examined once a mouth for readiness.

Safety Supervisor Duncan said the role of equipment of this type in relation to the plant's over-all program is "to prevent injuries. Equipment is vital because of the amount of hazards encountered in our industry."

The important things to look for in equipment?

"Quality, performance, durability, and employe comfort and acceptance," according to Mr. Duncan.

Committees and Training

Aside from equipment—and just one of the many other things that makes the Scott plant program tick—is a series of safety training meetings. Typical was a late spring school in fire protection and fire fighting. A total of 174 salaried and hourly employes attended—in turn—one of six sessions held during a two-day period. The classes included a lecture by Jesse Rosenquist, MSA sales engineer in the New England area, a film, and apparatus discussion and demonstration.

There are six plant safety committees—including a general group and five other units representing each major department. The general committee consists of department superintendents, chairmen of the other five groups, a plant nurse and the safety supervisor. Departmental committees are made up of supervisors and other employes. Each committee totals 12 members and meets at least once each month.

Equipment, safety meetings and the like have played equally major roles. But, the real backbone is a combination of employe attitude and active participation by company and union management, according to Mr. Duncan.

Although the 1959 accident frequency rate surpassed the goal of 3.0, 1960 will require an even firmer "backbone" if the plant is to prove itself equal to the challenge of Division Mgr. Blessing.

His challenge? An accident frequency rate of 2.0.



ADEQUATE OXYGEN IS VITAL before men enter this white water chest for cleaning, Guard Sgt. Dominique Bizier checks amount of oxygen in vessel with portable indicator. All tanks, vessels and digesters are tested.



LIFE LINE IS SECURED before Lawrence Fortier, equipped with MSA safety belt, is lowered into white water chest scheduled for cleaning. Tank has already been checked for oxygen deficiency. George Pooler stands by.



CARBON MONOXIDE can be deadly in many plant areas. Here, Safety Supervisor James A. Duncan Jr. checks with a Mine Safety carbon monoxide tester, while Walter Fedorovich operates lift truck.

Index to Contents of PULP & PAPER for 1960 SAVE FOR REFERENCE

Jonuary (Vol. 34, No. 1) Scott's Int'l Partnerships Challenging 60's-Part 1 Georgia Kraft Mill Planned Pulp Consumers Tour South Water Utilization: Strange Conting: Pac. Coast PIMA TAPPI Alkaline Pulping 100% Bagasse Newsprint: Tecnica Cubana Felt Workshops India Must Triple Capacity Communist newspr. to India PULPWOOD SECTION Pulpwood in the 1960s Pines Promote Perry, Fla. Report on Russia: Garratt Flanter Study-Battelle- February (Vol. 34, No. 2) Paper Week Preview Dexter's New Textile Challenging 60's-Part II Plan Ariz. Newsprint AL&P's Sitka, Alaska Mill Great Forest Future in Alaska: Heintzleman Pioneers in Fiber Bonding Air Systems: Goldner	Hardwood Newsprint: Noralyn 78	of Maine Open House	PULPWOOD SECTION Wood Inventory; Production 113 IP's Combine 129 Log Loader for Barges 125 World Forestry Congress 126 Logging on Steep Slopes 129 October (Vel. 34, No. 11) Europe's Paper Boom 77 Scandinavian Mills 80 Sorg Rebuild 58 Digester Corrosion Solved at Buckeyey: Foster 84 ALP Pulp Finishing 87 TAPPI Alkaline Conf. 90 High Pressure Power: Judge 94 MB&PR Flakeboard Mill 97 Improved Pulp Chlorination: Part 1: Duncan, Rapson 100 Waste Handling 104 Black-Clawson Research 105 Mills Combat Insect Problem 106 Sales, Earnings (1st half) 109 PULPWOOD SECTION Outside Chip Storage in South 111 Mechanized Harvesting for 1985: Jasper Chip Use in Pac. N.W. Newport 121
All Systems: Conduct		eania-by Countries 258	Pulpwood in Idaho, Montana:
PULPWOOD SECTION	Nev	w Approach to Exports: Meissner 267	Wilson
Alaska Logging Methods Forest Conservation APA Meeting Review M&O's Chain Saw Safety Guard Russian Logging Methods Morch (Vol. 34, No. 3) K-C. Darblay Partners Food Additives Problem Groundwood from Hardwood Chips in Japan Waldorf-Hoerner, Missoula, Montana Problem at Suction Roll: Wightman Sales, Earnings: 9 months CFPA, Montreal Fulp Prices (W. Mich. Conf.) -Man Finishing: Bowaters Facific TAPPI (Effluent, Mixing Starch, Digesting) Pollution Causes in West Paper	PULPWOOD ANNUAL—APA MEETING Assemble A	273	November (Vel. 34, No. 12)
PULPWOOD SECTION SPCA Meeting: Hardwood Values Portable Mechanical Spar Pulpwood Loader Superior B.C. Cones Analysis of Furchased Chips: Holekamp April (Vol. 34, No. 4) Paper Week Preparation for the 60s Timber Supply Crisis Additives Amendment European Markets for USA High Finish Coating	Description U.S. Chemical Spurs Growth: U.S. Chemical Spurs Growth: U.S. Chemical Spurs Growth: U.S. U.	ptember (Vol. 34, No. 10) S. Export Problem: Cooney 80 Iving Export Problem: Lagerice 81 Stream Cost of Kraft 88 Ber Competition Seen: Richie 86 ardboard at Bowaters Catawba 90 ow-Cost Pulp Cutting: Lindell 96 ow-Cost Pulp Cutting: Lindell 96 ow-Gost Pulp Cutting: Linde	December (Vol. 34, No. 13) TAPPI Engineering Conference 67 Puget Sound By-products Program 79 Drum Chipping at Auglo-Canadina 80 Poff-machine Blade Conting 84 Fine Paper Mill in B. C. 86 UN Tokyo Conference 92 CZ-Hawaiian Bagasse Process 94 Scott Paper Safety Program 97 PULFWOOD SECTION Pulpwood Trucks 104 Wood for Pulp in Pacific NW 107 Sky Car Logging Device 112 12 12 13 14 15 15 15 15 15 15 15

Gunnar Nicholson Honored By Award from Sweden

Gunnar Nicholson, president of Tennessee Pulp & Paper Co., the new mill in the South sponsored by a group of box manufacturers, has been honored by receiving from the King of Sweden the title of Commander of the Order of the Vasa. A formal presentation occurred in New York on Oct. 26, with Swedish Consul General Kronwall acting for the King. Mr. Nicholson, born in Sweden, moved to Canada as a young man where he en-

tered the pulp and paper industry and he was prominently identified with many major developments in Canada and Southern United States. For many years he was with Union Bag & Paper Corp., as manager of the big mill in Savannah, Georgia, and later was vice president and executive vice president of that company. He resigned a few years ago to devote his full attention to the Tennessee project. The Order of the Vasa is presented by the King in recognition of outstanding services.

Building New Straw Pulp Mill Near Larissa, Greece

Athens . . . The Parsons & Whittemore/Lyddon Organization, New York, London and Paris, has contracted to build a new straw pulp mill of 12,000 annual tons capacity near Larissa, Greece. It will be completed in two years at cost of \$5,700,000.

Later a paper mill of similar capacity will be built at the same site. Black-Clawson equipment, principally built at Newport, England, will be used.



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PULP & PAPER - December 1960



"TD-9 carts out 1500 bf loads...

beats any other tractor I've seen"

-J. A. Turlington, Goldsboro, N. Car.

J. A. Turlington loads up to 1,500 bf of tree-length pine on his Carco logging arch—puts his 66-hp TD-9 in gear, and high-balls to the loading deck.

No lack of power! The TD-9 is the one with the plus wallop of smooth, 6-cylinder turbocharged Diesel power!

No delays on adverse footing! The TD-9 has exclusive International 3-point track suspension to give maximum track-to-ground contact for full-time positive traction!

No "clutch-roughing" to start out with big loads the TD-9 gives the power-transfer efficiency, nonaggressive action, and heat defiance of a continuousring, sintered metal-faced engine clutch!

"The performance of the TD-9 is far better than any other tractor in its size class I have seen," states owner Turlington! "It carts out loads up to 1,500 bf."

His TD-9 logs 40 to 60 mbf per 40 hours with ease—and burns only 11/4 gallons of Diesel fuel per hour in the process!



No "slow-motion" lug-downs even pulling big loads upgrade. Turbocharging gives extra wallop to help maintain engine rpm—and 6-cylinder smoothness permits full power output without excessive vibration. Here, the Turlington TD-9 "marches" steadily up the rise with close to 1,500 bf on the arch!

TD-9 operator comfort is a big incentive to get you full production through full shifts. Reacheasy controls save effort—spring-boosted steering cuts the "muscle tax." The TD-9 gives you simple, direct, push-button in-seat starting. No coolweather "blast-off" aids needed—no bothersome levers or "clothes-line" to wrestle—no extra starting engine to buy and "wait on!"



Get in the TD-9's thick-padded foam rubber cushioned seat. Try simple, direct in-seat starting (standard equipment). Compare 6-cylinder smoothness and turbocharged Diesel capacity to 4-cylinder competitive rigs. See what it means in rough woods operations to own exclusive International 3-point track mounting. Let your International Construction Equipment Distributor demonstrate!



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Pulpwood Section

PULPWOOD TRUCKS have a major role in moving the nation's 39 million cords of pulpwood.



Pulpwood Trucks

APA compiles data on legal load limits with sketches of various truck combinations to aid those concerned with truck transportation

· Practically all pulpwood today is moved by truck during at least some phase of its journey from stump to mill, according to technical release No. 60R-38 issued by the American Pulpwood Assn. There is such a bewildering array of truck equipment available, says the report, that the APA has assembled a table of legal load limits and sketches of various tractor, axle, full trailer and semitrailer combinations, with their proper "trade" names as a guide to those concerned with truck transportation.

The report was prepared by the APA in cooperation with Mack Trucks, Inc.

LEGAL LOAD LIMITS for various type vehicles. This chart is limited to the Northeast for brevity but the pattern of relationship between axles and load limit is somewhat the same for all states, says the APA.

(*) Maine allows 10% weight tolerance for

(*) Mame anows 10% weight tolerance for logs and pulpwood.

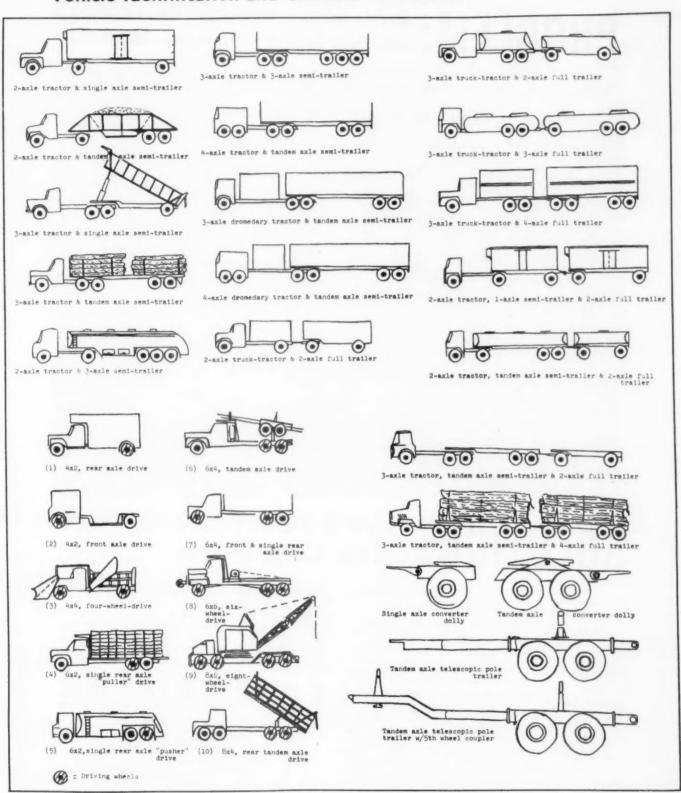
* Tandem drive mandatory in N.H., to gross 47,500 lbs.

(X) Ontario allows gross train weights up to 120,000 lbs. on multi-unit combinations.

NOTE: Above weight limits were believed accurate by APA, as of October 1, 1959.

					00 00		
MAINE (*)	32,000	50,000	50,000	60,000	69,000	60,000	60,000
MARYLAND	44,800	62,000	65,000	65,000	65,000	65,000	65,000
N. H. *	33,400	47,500	52,800	66,400	66,400	66,400	66,400
NEW YORK	44,800	58,400	65,000	65,000	65,000	65,000	65,000
PENNA.	33,000	47,000	50,000	60,000	50,000	60,000	62,000
VERMONT	30,000	40,000	50,000	60,000	60,000	60,000	60,000
N. B.	24,000	36,000	44,000	54,000	54,000	60,000	60,000
ONTARIO (X)	28,000	40,000	46,000	58,000	58,000	70,000	68,000
QUEBEC	27,000	34,000	40,000	50,000	40,000	50,000	50,000

Vehicle Identification and Classification Guides



PROBLEM: J. M. Jones Lumber Co. wanted all this from a tractor-loader...

Economical transporting of logs from barge landing to mill • Fast unloading of trucks at the mill yard

Separation and stacking of logs by species • Dependable production regardless of weather

Maneuverability in close quarters • Reasonable initial cost and low maintenance and operating costs

Plenty of reserve power and speed



SOLUTION: Cat 977 Traxcavator with Log Fork

How is this loader doing at J. M. Jones Lumber Co., in Natchez, Miss.?

"It handles about 10,000 bd. ft. per hour on about a 300-ft. one-way haul from barge landing to mill," reports H. L. Jones. "It also unloads incoming trucks and keeps the haul roads cleared. We're very happy with it."

From tracks to lift arms the 977 Traxcavator is built extra strong to stay on the job with minimum maintenance. For example, its patented lifetime lubricated rollers need no lubrication until rebuilding. Hydraulic track adjusters operate with a few strokes of a grease gun. And with its quick-change attachments, you can always keep it busy!

What's your specific problem? Ask your Caterpillar Dealer to demonstrate and prove the machine for your job. Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.



MORE SPEED — BETTER CONTROL — NEW POWER SHIFT TRANSMISSION. The new Series H 977 features the Caterpillar power shift transmission that changes speed and direction with one lever, speeds up cycles, lets the operator concentrate on loading. Maneuvering is easy and fast as a flick of the fingers. Besides the new transmission, the Series H 977 and 955 have more horsepower from new Cat Diesel Engines and new live action hydraulics.

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THERE IS STILL PLENTY OF STANDING TIMBER in Pacific Northwest despite extensive use of mill residues for pulp production. Shown here is St. Helens Tree Farm of Weyerhaeuser Co., near Mt. St. Helens, Washington.

Availability and Use of Wood for Pulp in Pacific Northwest

By JOHN B. GRANTHAM Chief, Forest Utilization Research, Pacific Northwest Forest and Range Experiment Station (Specially prepared for PULP & PAPER)

 Pulp production, and accompanying pulpwood consumption, in the Pacific Northwest have shown a steady growth for the past three decades and indications are that growth will continue. Chip supplies from sawmill and veneer mill residues, which now provide nearly one-half of the industry's wood requirements, could be doubled if all chippable mill residues were so used.

Current use of residue materials could be quadrupled if sawdust and shavings are considered as potential raw material. An additional million cords of chips are available from logged-over-lands each year.

If the timber lost annually through mortality were recovered by thinnings and prompt salvage of timber lost through wind, insect or disease damage, this volume alone would permit doubling the industry's current pulp production. Potential total pulpwood supply in the Pacific Northwest is estimated to be 23 million cords a year or more than three times the 1957 use of 7 million cords. This potential supply assumes continuing log use at the 1957 level of 3 ½ million

The logs, cordwood and chips used by the pulp industry are of many species and come from a variety of sources. In providing an outlet for such a variety of raw materials the pulp industry has contributed greatly to improving utilization of the region's forest resources.

Use of Sawmill Residue

Historically the pulp industry of the Pacific Northwest has used sawmill residue continuously for part of its raw material supply. Large volume use of chipped residue has developed since World War II.

During the 1920's pulp mills on Puget Sound obtained some 40% of their wood from nearby sawmills cutting spruce and hemlock lumber. Reduction in the cut of hemlock and spruce lumber in western Washington from an average of 1,400 million board feet annually during the 5-year period 1925 to 1929 to 230 million board feet in 1935 reduced available residues of these species to less than one-fifth of the volume previously

available. Meanwhile, pulp production rose, after a low in 1932, and the pulp industry relied more heavily on logs and cordwood to supply its grow-

ing demand for wood.

However, virtual disappearance of an open log market in the 1940's and increased stumpage costs spurred interest in residue use. Since World War II growing pulpwood requirements have been largely supplied by increased use of chips from residue. Between 1947 and 1957, when the region's pulp production increased by 1,695,000 tons per year, use of residue increased by 2,456,000 cords, and use of logs by 1,316,000 cords. Thus, residue supplies the wood needed for about two-thirds of the added pulp production.

Sources in Oregon and Washington

Contrasts in pulpwood consumption in Washington and Oregon require that the two states be discussed separately. A major difference is in the available pulpwood supplies. Douglasfir makes up 72% of Oregon's standing timber volume as compared with 36% of Washington's timber. Overall Washington has produced the major share of the recognized "pulp species" and still has nearly double Oregon's standing timber volume of hemlock, true firs, spruce, lodgepole pine, and alder.

It is not surprising, therefore, that mills in Washington account for 83% of the region's pulp production. Growth of the pulp industry in Oregon awaited an increased demand for kraft pulp, for which Douglasfir or other resinous woods could be



Author JOHN B. GRANTHAM

Mr. Grantham became chief-forest products research at Pacific Northwest Forest and Range Experiment Station, Portland, Ore., last year after seven years as director of forest products research at Oregon Forest Product Research Center, Corvallis. Before that he headed forest products section of School of Forestry, Oregon State College.

Sawtimber Supply and Use in Pacific Northwest by Species, 1957

Species	Net vol-		Percent			
	avail- able	Lumber	Plywood	Pulp	Total	wood
	<u>M</u>	illions b	oard feet,	log scal	<u>e</u>	-
Douglas-fir	366,000	5,574	1,645	200	7,419	62
Western hemlock	114,500	821	74	1,007	1,902	16
Ponderosa pine	92,000	1,234			1,234	10
True firs	73,500	380	24	220	524	5
Spruce	13,000	51	18	80	149	1
Hardwoods	17,000	40		150	190	2
Other species	72,500	382	23	40	445	4
All species	748,500	8,482	1,784	2/1,697	11,963	100
Percent of use:		71	15	14	100	*******

¹ Sources: State of Washington, Dept. of Natural Resources "1957 Timber Harvest Report," Oregon State Board of Forestry "Timber Volume Removed 1957," species distribution from production figures of West Coast Lumberment Asan, Western Pine Asan, Douglas Fir Plywood Asan, and from Washington State Institute of Forestry Pine Asan, 22, December 1957. Total represents only 49% of wood used for pulp in 1957. The balance in from residue, salvage logs, and wood from outside the region.

Estimated Wood Supplies, Other than Logs, Available and Used in the Pacific Northwest, 1957

	Ore	gon	Washington,				
Type of material	Avail- able	Used	Avail- able	Used			
	Thousand cords						
Manufacturing residue: 1/ Chippable 2/ Other:	3,684	568	1,539	2,177			
Veneer cores Sawdust Shavings	166 1,997 1,334		66 856 557				
Logging residue3/	1,225	50	330	300			
Annual mortality (recoverable in thin- ning or salvage cut- ting)	4,350	50	3,150	150			
Totals	12,756	668	6,498	2,627			

¹ Availability based on lumber and plywood production data for 1957 and converting factors reported by Oregon Forest Research Center. Use data from Northwest Pulp and Paper Asm's "Economic Survey."
"Economic Survey."
² Percentage figures for available chippable manufacturing residue by species are as follows:

^a Based on last statewide survey of logging residue in western Washington, and assuming in 1957 that recoverable residue in western Washington and western Oregon averaged 5 and 10% respectively of the timber volume removed in initial logging.
⁴ Based on the rule-of-thumb that mortality averages .5% of timber inventory each year.



HOW TO MAKE MONEY IN SMALL-TIMBER LOGGING



Have you ever figured how much extra it costs you to use an over-size skid-tractor on timber that could just as easily be handled by a

low-cost Case Utility rig? And have you considered the extra cost of letting a big machine "sit idle" for a week—two weeks—waiting for the right ground condition?

Simple arithmetic shows that for small and medium-size logs, you'll be hundreds of dollars ahead with a Case 310E Dozer-Winch tractor. It costs only a fraction of the price of larger rigs...in fact, you can own two 310's for the price of one larger outfit. With the 310E you also pay much less for fuel, upkeep and repairs...less for insurance and depreciation...and require a lot less clearing and trail-building for this compact skidder.

Yet, with all its economy, the rugged Case 310E gives you 5815 lbs drawbar pull with high breakaway torque. It maneuvers easily in close quarters and soft ground...turns full loads with full power on both tracks... has extra-high ground-clearance for traveling over obstacles. Model 310E is offered with economical Case diesel or gasoline engine. Wide-mount 72" x 24" bulldozer lifts to full 42" for easy decking and pushing. Universal-joint-type cylinder-mount protects hydraulic components against stress. 310E is also

available with mechanical angling dozer, hydraulic powertilt or power-angling dozer; with 3500-lb capacity log-loader; or as drawbar tractor.

Built-in CARCO 12,000-lb line-pull winch gives you smooth positive winching, holding, or free-spooling at all times—"on-the-fly" or standing still. A single hydraulic lever provides convenient winch control from the cockpit. Three- or four-roller fairlead gives you wide-angle winching with minimum cable wear.

Call your Case Dealer for free 310E demonstration on your show. You'll see how easily it handles your smaller timber at big savings in first-cost... plus lower net cost per bd ft, all year long. Mail coupon for complete information on machines that interest you.

Compare true ownership costs!	Case VS	Over-size Tractor
Initial investment	.\$6000°	\$15,000°
Yearly depreciation and interest costs (17%)	.\$1020	\$2550
Daily ownership cost (dep, int, based 200 days/yr)	.\$5.10	\$12.75
*Avg del price, U. S.	A. I	

Wouldn't you rather have the saving in your pocket?

yJ. I. CASE CO., Dept. M1790, RACINE, WISCONSIN Send full details on 310E Utility skid-tractor and other logging equipment.	CASE. Utility
Name	Title
Company	Address
City	State



Profit with greater pioneering power... increased skidding capacity in the new TEN-TEN

There are plenty of good reasons why productivity goes up with a new John Deere TEN-TEN Woodland Crawler. First is the all-new four-cylinder John Deere 40 h.p. gasoline or Diesel engine, designed for high efficiency throughout the full throttle range. An optional new hydraulic direction reverser with wet clutch speeds maneuvering on dozing and decking work, and cuts out almost all clutching and shifting. Matched equipment includes free-spooling winch, integral and drawn log arches, and a full selection of inside- and outside-mounted dozers.

From John Deere's dozer line you can select the blade width and mounting best suited to your type of operation. All cutting edges are of three-piece design with removable end bits for simple, low-cost maintenance. All-hydraulic models now cut, lift, angle and tilt in fast response to a revolutionary single T-bar control.

Check the yellow pages for the name of your nearest John Deere dealer. He's the man to see for a TEN-TEN demonstration plus facts on the John Deere Credit Plan. Ask about new long-term lease arrangements now available, too.



BULLDOZERS
AND
LOGGING
EQUIPMENT

JOHN DEERE . 3300 RIVER DRIVE . MOLINE . ILLINOIS

used to advantage, and the willingness of operators to rely heavily on chips from mill residues as a raw material supply. The latter factor is particularly important during this era of severe competition for standing sawtimber.

Despite the greater availability of "pulp species" in Washington the potential pulpwood supply from manufacturing residue, logging residue, and annual mortality is greater in Oregon, and current use of pulpwood is less

In 1957, wood requirements of Washington and Oregon mills were supplied as follows:

	Washir	n Ore	Oregon	
	M cords	%	M cords	%
Logs	2,810	49	550	45
Chips	2,180	38	570	47
Cordwood	750	13	90	8
	5,740	100	1,210	100

Additional Pulpwood Sources

Except for sawlogs, which provided 40% of industry's 1957 wood requirements, there is opportunity to greatly expand pulpwood sources in the Pacific Northwest. Indications point to a continuing rise in the region's pulp production, which rose from 323,000 tons in 1923 to 3,960,000 tons in 1957. Wood consumption increased from 450,000 to 6,250,000 cords.

Manufacturing Residues

Costwise, the increased use of chips from mill residues appears attractive to provide more pulp production. The 2,750,000 cords of chipped residues used in 1957 represented about half of the potential supply of chippable mill residue, if sawdust and shavings are considered as potential raw material.

More than 70% of the manufacturing residues developed in Washington and Oregon, and 80% of those developed in the western portion of the two states, are Douglas-fir. Furthermore, since it is the practice at some mills to mix log species in sawing, some of the residues from "pulp species" are mixed with Douglas-fir. Thus, if the 2½ million cords of unused chippable residue or the nearly 5 million cords of fine residue are to contribute to increased pulp production in the Pacific Northwest, it is desirable that ways be found to improve the quality of Douglas-fir pulps and especially to improve their usefulness in a wider variety of paper products.

Logging Residue

Only a small portion of residue wood left on cutover lands is currently used for pulp because costs of

Pulp Production and Wood Consumption, Pacific NW, 1925-1958

Year	Production	Consumption				
lear	Production	Total	Residues	Logs and bolts		
-	Thousands of tons -		Thousands of	cords		
1925 1926 1927 1928 1929	323 378 469 563 780	450 539 713 960 1,297	180 240 300 350 480	610 817		
1930 1931 1932 1933 1934	815 818 608 773 949	1,351 1,346 954 1,337 1,526	300 350	654 1,176		
1935 1936 1937 1938 1939	1,038 1,198 1,523 1,088 1,378	1,694 1,933 2,681 1,792 2,384	220	1,713		
1940 1941 1942 1943 1944	1,839 1,994 1,994 1,559 1,668	3,069 3,286 2,972 2,271 2,482	180	2,302		
1945 1946 1947 1948 1949	1,638 1,739 2,005 2,116	2,462 2,768 3,171 3,344	290	2,881		
1950 1951 1952 1953 1954	2,518 2,769 2,684 2,808 3,065	2/3,572 2/4,240 4,250 4,442 5,150	782 990	3,458 3,260		
1955 1956 1957 1958	3,413 3,611 3,690 3,497	6,160 5,921 6,943 5,736	2,164 2,746 2,718	3,757 4,197 3,018		

¹ Estimated breakdown of total consumption is incomplete-based on limited information.

² Pacific Coast total less 250,000 cords as an estimate of California consumption.

recovering this material are relatively high. It is estimated that about 50,000 cords of logging residues were used in 1957 but this represented less than a quarter of the recoverable volume of such material.

Volumes of wood available as logging residues on cutover land are difficult to estimate because of the wide variation. The last statewide survey of cutover lands in Washington revealed that there were 7 to 23 cords per acre of usable wood left after logging. Volume estimates were based on pieces 4 ft. or longer in length and containing a minimum volume of 5 cu. ft. The material consisted primarily of tops and broken pieces.

Since it is considered that the small volumes per acre would limit salvage to the more accessible portions of cutover land, estimates of available volumes of logging residues are taken as one-half of the estimated quantities accumulated annually. Available residues were considered to average about 5 cords per acre in Washington and 10 cords per acre in Oregon, or 5% of the initial timber volume removed in Washington and 10% of that removed to Oregon. The totals arrived at are admittedly rough estimates.

Annual Mortality

A virtually untapped source of pulpwood is available as thinnings from growing stands or from salvage of trees killed by fire, insects, disease or windthrow. Estimated mortality of %% of timber inventory each year would provide 7,500,000 cords of wood annually.

Observations made on 37 permanent sample plots for a period of some 25 years revealed that losses ranged from 16 cu. ft. per acre per year in

Pulpwood Section

Estimated Pulpwood Sources in Pacific Northwest, by Species and Class of Material, 19571

Species	Logs	Cordwood	Residue	Total volume	Percent of total
Parties and Partie		Thou	sands of c	ords	
Pulp species 2/	2,780	450	688	3,918	56
Douglas-fir	470	122	1,965	2,557	37
Hardwoods	85	270		355	5
Other species	20		92	112	2
All species	3,355	842	2,745	6,942	100
Percent of total	48	12	40	100	

¹ Sources: Northwest Pulp and Paper Assn.'s "Economic Survey," preceding table, and distribution of species in residues developed.

² Hemlock, true firs, and spruce.

25, to 35-year-old stands to as high as 341 cu. ft. per year in some 70- to 100-year-old stands." On the average, the loss was 83 cu. ft. per acre per year or 1 cord per acre. If the 29 million acres of forest land in the Douglas-fir region were fully stocked with growing timber, the potential mortality loss could amount to 30 million cords. Thus, the figure of 7½ million cords potentially recoverable each year from growing stands in Washington and Oregon appears attainable, if and when this wood is needed.

The best estimate of the amount of wood recovered in thinning operations in 1957 is 50 to 100 million board feet or 100,000 to 200,000 cords. So far as can be determined, only a small proportion of this timber was used by pulp mills and most of it was sawed into lumber. The important fact is that only 1 to 2% of the potentially available material was used for any purpose.

¹Available wood for Industry in the State of Washington, Summary Report No. 1 Washington State Institute of Forest Washington S Products 1951.

⁸Johnson, F. A. Mortality studies in young fir plots show great annual wood losses. The Lumberman, June 1953.

Sky Car Logs Inaccessible Areas ... operates with less breakage, more safety



RADIO-CONTROLLED SKY CAR LIFTS logs clear of ground as it begins 3,000-ft. long descent to landing. Chaser lowers log by radio controls in tiny transmitter attached to his belt.

Helicopters aren't yet being used for logging on the Pacific coast, but the sky car, now being used by Crown Zellerbach Canada on Vancouver Island, is the next thing to it, according to Vice Pres. Hugh J. Hodgins.

The sky car manufactured by Skagit Steel & Iron Works at Sedro Wooley, Wash., is a radio-controlled carriage which runs on a skyline. Its chief advantage is that it can bring out logs where the terrain is so steep and rugged that no other transportation could be used.

The four-ton carriage runs along the two-inch steel skyline on two carriers with two 30-inch diameter wheels each. The skyline itself is anchored to a spar at one end and to the ground at the other.

Inside the sky car is a 100 hp. Model 4-53 General Motors diesel engine which lifts logs clear of the ground by a tong line. The car then runs down the skyline by gravity to the landing on the valley's floor.

With the 450 hp. Berger skidder now being used as a snubbing machine and haulback, it may prove economical to log over a mile out from the landing, since the tramway-like skyline has intermediate supports. Currently, the line is about 3,000 feet long, but covers a vertical distance of about 1,500 feet up a mountainside where the grade averages 70%.

An interesting feature of the system is that the sky car's engine is remotely operated by Rothenbuhler radio controls. At the end of a turn, the hooker can control the amount of slack line needed, then lift the load clear of the ground. So far, most of the loads at the Cruikshank River operation, where the sky car is employed, have been between 1,200 to 1,500 board feet, but loads twice as large can be accom-

As the sky car runs down the line a 1% inch snubber line controls the rate of descent. At the landing, the chaser, standing clear, lowers the logs by radio



Jeffrey Conveying Machinery was first installed at this pulp and paper mill over ten years ago . . . and selected again for use in these recent additions to the company's facilities.

Jeffrey equipment again selected when this mill was extended when this mill was extended

The expanded factor of the second of the sec

Jeffrey Drag Type Feeders—One of a battery of feeders under chip storage bin. Chips pass through upper strand of flights to bottom plate. Lower strand carries them to discharge point over belt conveyor.



Jeffrey 36" x 36" Type B Wood Hog-Reduces bark and broken pulpwood sticks from barking draws

The expanded facilities of this pulp and paper mill include Jeffrey conveyors, chain, and machinery...and a lot of credit for their re-specification goes to other Jeffrey equipment installed in the original mill over ten years ago.

Wherever Jeffrey equipment is used, it establishes a solid performance record for efficient, dependable operation. Jeffrey makes a broad range of equipment for conveying, processing, power transmission...equipment that can help you operate at top efficiency. For complete information write The Jeffrey Manufacturing Company, 809 North Fourth Street, Columbus 16, Ohio.



CONVEYING . PROCESSING . MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

controls in the tiny transmitter attached to his belt. The strip which can be logged by the sky car is 150 ft. on

each side of the skyline.

There are several advantages of the sky car apart from the fact that it accomplishes a job that would be beyond the capacity of conventional systems. One is that breakage is reduced to a minimum because the log is suspended in mid-air and its only contact with the ground is when it is finally delivered to the landing. Also, the logs can be carried direct to areas where good landings can be established on a valley floor. With fewer running lines, the crew can get clear more easily, making for a safer operation.

The CZC application is the first in Canada, but there have been two others in the Pacific Northwest states, one at McCall, Idaho, and another near Darrington, Wash. The Canadian installation incorporates several refinements resulting from the brief experience at Darrington.

Forest Booklet Describes Multiple Use Program

The Forest Service's Operation Multiple Use program is described in a new publication by the U. S. Department of Agriculture. It explains the accelerated program to develop all national forest renewable resources to meet the increasing demands of an expanding population during the next 10 to 15 years. The program carries out the charge of Public Law 86-517 passed in 1960, directing that the national forests be administered for multiple use and sustained yield.

The Forest Service describes the program as a race against time. "We are trying to make the potential yields of water, recreation, timber, forage, and wildlife from these public forests keep up with a growing population's growing needs," said Richard E. McArdle, Chief of the Forest Service.

Among specific national forest projects needed to carry out the program are increasing the water yield; harvesting more timber; stepping up tree planting; improving timber stands; building up the range; improving wildlife habitat; improving fishing on 7,000 miles of streams and 56,000 acres of lakes; more than tripling the camp and picnic facilities; construction of roads and trails; and better protection of the national forests against insects, disease, fire, weather, and harmful rodents.

Operation Multiple Use also intensifics research to develop more efficient, effective, and economical methods of managing and using the forest resources. Among other research projects being conducted are studies of forest fire behavior, new techniques for eliminating runaway fires responsible for 90% of forest fire losses, and forest genetics.

A copy of "Operation Multiple Use—Program for the National Forests" booklet may be obtained from the Forest Service, U.S. Department of Agriculture, Washington 25, D.C., or from any Forest Service field office.

American Bar Association Names Timber Committee

The increasing importance of forests, tree farming and multiple use of forest lands in the American economy was influential in the establishment of the Committee on Timber and Vegetative Resources in the American Bar Association's Section of Mineral and Natural Resources Law at the recent Annual Meeting of the ABA in Washington, D. C.

L. Clair Nelson, associate counsel of The Champion Paper and Fibre Co., is chairman of the new commit-

tee.

Mr. Nelson stated that one of its principal objectives would be to obtain recognition within the ABA of the problems involving timber, tree farming and forest lands, and by that means to utilize the force of the ABA to advance proper recognition of the modern concept of timber as a replenishable natural resource. Also, he stated it is hoped that the committee

may serve as a clearing house for legal information in this specialized but rapidly growing field.

Lawyers who are interested in this field, regardless of whether they are members of ABA, are urged to contact Mr. Nelson at Hamilton, Ohio.

IP West Coast Production Center in Operation

Initial manufacture of lumber and plywood at the new Chelatchie Branch plant of International Paper Co.'s Long-Bell Div. got under way in November. This 220-acre plant site, located 42 miles from the divisional headquarters at Longview, Wash., includes component plants designed and integrated to achieve maximum economic utilization of logs harvested from tributary forests.

Logs enter the plant via a central processing section in which they are debarked and bucked to appropriate length for processing in sawmill or plywood plant. The lumber department was designed for 125,000 bd. ft. daily production. It consists of sawmill, dry kilns, planing mill, 800 x 112 ft. lumber-handling building, shipping dock. The 5-acre plywood plant is capable of producing 72 million sq. ft. per year. At start-up the production center had a 32 million ft. inventory of logs dry decked at the site's 33-acre storage area.

The company had 50 standard rail cars specially converted for transport of chips to be produced from mill residue wood at the Chelatchie plant.



NEW YORK'S MAYOR ROBERT WAGNER GREETS FORESTRY CHAMPS who won top prizes in the Seaboard Airline Railroad's annual FFA contest. These young men toured the eastern U.S., were honored by industry leaders at New York luncheon. With them is the Seaboard's Forestry Agent Robert Hoskins, presenting a Georgia ham to the Mayor. From left, the winners are Tommy Kersey of Swainboro, Ga.; Sammy Abbott of Darlington, S.C.; Jimmy Finley of Grove Hill, Ala.; Messrs. Hoskins and Wagner, MacArthur Burnsed of Maclenny, Fla.; William Dalton of Wytheville, Va. and Butch Plyler of Wesley Chapel, N.C. These six youths planted a total of 303,200 pine tree seedlings in addition to other feats.

Veteran logger chooses a D6 for salvage logging

BILL RAYNOR got the job cleaning up 1½ million feet of small timber for the U. S. Forest Service near Sandpoint, Idaho. He picked a Cat D6 Tractor with Bulldozer and Hyster Winch to handle the job. Why? "After working around many areas—always around Caterpillar-built equipment—I know at firsthand they can't be beat for economy and long life."

Men like Bill Raynor who depend on their tractors for a living know the importance of using the *right* machine for the job on hand. The D6 is *right* for handling this type of timber. As for output, it has always been designed to do more work at lower cost than any machine in its power range.

That goes double for the new D6 Series B. Stacked against the previous model—or against any tractor of comparable size—the new D6 is way out front. Some reasons why:

NEW ENGINE — a Cat D333 Diesel Engine (93 flywheel HP...19,495 lb. max. drawbar pull) delivers 25% more lugging ability. And a new direct acting governor results in faster load response.

NEW INTEGRAL HYDRAULIC SYSTEM gives you more work power at the tools. Under-the-hood mounting of tank, pump and valves permits convenient routing of hydraulic lines to bulldozer or implement cylinders, frees front and rear for attachments.

NEW OPERATOR CONVENIENCE — An all-new cockpit has coordinated controls that make the tractor operate almost as if it knew what was needed next.

In addition, the new D6 Series B features dry-type air cleaner, hydraulic track adjusters (optional), lifetime lubricated track rollers, the oil clutch and forward-reverse lever. Get the full details from your Caterpillar Dealer. Ask for a demonstration—see for yourself how the new D6 delivers greater production on the job!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.



CATERPILLAR Colorpillar and Cut are Registered Tradomerics of Caterpillar Tractor Co.







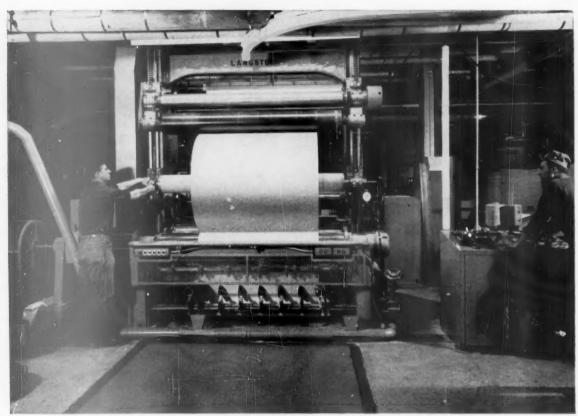
Stainless Steel has an excellent record in the pulp and paper industry. It meets the requirements. It has strength where it counts; it has long-term reliability; it is easy to clean.

Take the suction boxes on the left for example. They help remove moisture from the pulp. This mass can include chlorites, chlorates, sulfites or sulfates. Stainless Steel can handle these compounds without trouble. This explains why the industry specifies Stainless Steel and why Beloit Iron Works uses it for strong, reliable suction boxes that are easy to wash clean.

This is solid Stainless Steel, It will not chip or peel. No danger of contaminating the moving pulp. Its durability in this service makes it one of the best investments in industry today. Specify Stainless Steel where you want the steady performance that means steady production. USS is a registered trademark



United States Steel Corporation - Pittsburgh American Steel & Wire — Cleveland Columbia-Geneva Steel — San Francis National Tube - Pittsburgh ssee Coal & Iron-Fairfield, Alabama United States Steel Supply—Steel Service Centers United States Steel Export Company United States Steel



New 72-inch Type CA Langston Slitter and Winder in Marathon Corporation finishing room handles rolls up to 60 in. in diameter at speeds up to 1500 ft. per minute. Finished rolls are lowered by hydraulic drop shown in foreground.

New Langston Slitter and Winder helps Marathon cut operating costs

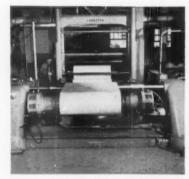
This new Langston Slitter and Winder installation at Marathon Corporation's Rothschild, Wis., mill is already helping the company cut costs and speed processing of quality paper and board.

For example, the power-operated shaftless unwind stand virtually loads itself. No crew is needed to bull heavy shafts into place. And the Langston hydraulic roll ejector permits 1-man removal of finished rolls. These two features alone are saving Marathon several thousand dollars a year. Water-cooled Wichita-type air brakes can be operated from control console.

Besides effecting major operating economies, these Langston machines

also pay off in higher quality rolls. The hydraulic rider roll control, for instance, automatically keeps nip pressure constant, regardless of the diameter or weight of the rewound roll. This insures rolls of uniform density with reduced tendency toward wrinkling or telescoping. The shear-cut slitters cut like scissors instead of a knife, shearing cleanly and keeping paper dust to a minimum. The resulting clean-edged, dustfree rolls are easier for customers to process.

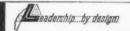
Learn how you can benefit from the advantages of Langston Slitters & Winders. Write Samuel M. Langston Co., 6th & Jefferson Sts., Camden 4, N.J.



Langston Shaftless Unwind Stand eliminates the time-consuming, back-breaking task of hoisting heavy shafts into place. The hydraulically actuated arms reach out, pick up the roll and lift it to running position—a 1-man, push-button operation.



LANGSTON



Strictly Personal

Midwest

Milton R. Bailey, Executive Vice President, Bulkley Dunton Pulp Co., Dies After Long Illness

Milton R. Bailey, executive vice president, Bulkley Dunton Pulp Co., died in Kalamazoo, Mich., on Oct. 15 after a long illness. He was 55 years old last July.

Mr. Bailey's sharply trained intellect and energy seemed to be boundless, even in the last months of his illness, when he carried on his activities with a show of courage which amazed his associates. Mr. Bailey was one of the most imaginative and stimulating leaders of his industry and he has left his creative mark on many of its enterprises. His analyses of industry developments and his counsel in regard to many projects and knotty problems were frequently sought.

Born in Champagne, Illinois, he graduated from the University of Illinois in economics. He became one of the principal loan officers of Continental Illinois Bank in Chicago. Later he moved to Kalamazoo, Mich., to be vice president of the American National Bank of that city, which had many close connections with the Michigan paper industries.

He joined the Bulkley Dunton organization in 1939 and was successively vice president and executive vice president of that company.

Mr. Bailey is survived by his widow, Josephine, and a daughter, Sherry, who is Mrs. Frank Boice of Empire Ranch, Sonita, Arizona. Mr. Bailey himself was an enthusiastic horseman, at both his country home near Kalamazoo and on many trips to Arizona.

Howard Paper Co. Marks 50th Papermaking Year

. , with open house and employe recognition day at its Urbana, Ohio mill. Firm is a division of Howard Paper Mills Inc. On hand for the festivities were Benton R. Cancell, exec. vice pres., St. Regis Paper Co.; William R. Adams, St. Regis president, and John E. Minch, president, Howard Paper Mills. (Howard became a St. Regis subsidiary June 29.) Other Howard Paper Mills executives present included: K .: .: Geohegan, vice pres. and technical director; J. H. Tate, vice pres., manufacturing and engineering; B. W. Kimmel, controller; Harry A. Legge, exec. asst.; H. H. Wegman, director of industrial and public relations, and C. M. Shockey, Urbana mill mgr.





McCourt

Sawyer

Earl McCourt to Retire Soon; His Activities are Divided

Earl M. McCourt, nationally known pioneer in furthering the amazing development and acceptance of high speed coated papers for the big national magazines and recently sales manager of waxing papers, paperboard, pulp and byproducts, for Consolidated Water Power & Paper Co., has announced his decision to retire at the end of the year, reports Stanton W. Mead, company president.

George W. Sawyer has been appointed to succeed Mr. McCourt as sales manager to waxing papers and paperboard. H. J. Lausman, manager of Appleton Division, will direct the company in an advisory sales capacity for these products until Dec. 31, when his retirement is effective.

Mr. McCourt, a veteran of nearly 40 years of service with Consolidated, has served in executive sales positions since 1937. He was named director of salesservice for enamel papers during that year and was instrumental in the development of the company's first national publication accounts and became widely known in the magazine publishing and paper fields. He continued in that capacity until 1953 when he was named sales manager of waxing papers, paperboard, and specialty products. He is a former president of the National Association of Sulfite Paper Manufacturers.

Mr. Sawyer has been serving the company as waxing paper sales representative since 1953. A graduate of the University of Maine with a major in pulp and paper chemistry, he began his employment with the company in 1933. He later worked in enamel paper sales-service and from 1946 to 1953 was sales representative for paperboard and waxing papers.

Weston Paper & Mfg. Co., Terre Haute, Ind., announces executive appointments: Edward T. (Ned) Turner Jr., former folding carton plant supt. for the Gardner div. of Diamond National Corp. at Lockland, Ohio, becomes director of technical services. A. D. (Dale) Meighen is named asst. plant mgr. at the Terre Haute 9 pt. corrugating medium mill; formerly technical director, he will continue in that position. . . J. E. Zeller is named resident mgr. at the Tekmold plant of Bemis Bros. Bag Co., Minneapolis. He was formerly project engineer at the dept. of physical research, also located in the Minnesota city. (The Tekmold plant is being moved to a newly-constructed facility at Muskegon, Mich.) . . .

Edward E. Arvidson, presently a member of the Keokuk sales organization, is named mgr. of the Des Moines, Iowa operation of Hoerner Boxes Inc. He succeeds A. L. Blake, who becomes divi-. Edward Martin, sional sales mgr. . . gen. mgr. of the Central Fibre operations in Marshalltown, Iowa, is named gen. mgr. of the three container plants in the Quincy Unit of Packaging Corp. of America. Plants are located at Quincy, Ill., St. Louis, Mo., and Marshalltown. L. Marvin Warrick, divisional sales mgr. for Cameron Machine Co., died recently at Menasha, Wis. . . Dr. James W. Miller, secretary to the board of trustees of Michigan State Univ., becomes the third president in the 57-year history of Western Michigan Univ., Kalamazoo. Ralph M. Buechler, sales mgr. of the Paper & Pulp div., D. J. Murray Mfg. Co., Wausau, Wis., is elected secretarytreasurer of the Affiliates Group in the Northwestern div., PIMA. . . .



Ohio Tappi Views Radical Departure in Paper Machine

. . . during recent meeting in Middletown. Group above views laboratory-scale experimental unit, on which The Black-Clawson Co. is testing feasibility of forming sheet vertically. Also on display at the new B-C Research Center was pilot system for producing woodpulp by new ChemPreg cold soda process.

Panel sessions were moderated as follows:
Continuous Pulping—Dr. John N. McGovern, Parsons & Whittemore Inc.;
Wastepaper Utilization—E. T. Luey, Boxboard Research Institute; New Equipment
in Stock Prepartion—E. N. Root, BlackClawson. At the evening banquet, Dr.
Edward J. Jones of the Institute of Paper
Chemistry discussed basic research studies
pointing to entirely new concepts in paper
manufacture.



John O'Brien, Potsdam Manufacturing Manager

. . . for Nekoosa-Edwards Paper Co. He is responsible for all paper machines, finishing and shipping operations, as well as production and quality control. He has been at the New York mill since 1935 and production control coordinator since 1937. In another recent Nepco announcement, responsibilities of Charles Sigvardt, mgr. of manufacturing operations for the firm's Wisconsin mills, were extended to operation at Potsdam.

Donald E. Reed, stores supervisor at the Elkart, Ind. Boxboard & Folding Carton div., Continental Can Co., has received a cash prize and wall plaque for his winning essay in the 13th Bolton Award competition. Presentation was made by F. Richard Convey, gen. sales mgr. of John W. Bolton & Sons Inc. and its Emerson Co. div., Lawrence, Mass. . . . Preston D. Carter, KVP Sutherland Paper Co., Kalamazoo, becomes chairman of Michigan div. PIMA on the resignation of L. B. Owen, Allied Paper Corp. Mr. Carter was formerly first vice chairman. . . .

Torwaid Torgersen is named to newly created post of corporate architect, Container Corp. of America. He will supervise all architectural activities and will be responsible for each construction project from its conception to its completion.

Henry C. Toney is promoted to project engineer at the Toledo, Ohio plant of Chase Bag Co. He was formerly asst. supt. . . . William A. Wiberg, recipient of a master's degree in paper chemistry from the Institute of Paper Chemistry, has joined the Research & Development div. of Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis., as a project engineer. . . Walter F. Strehlow becomes senior consulting engineer for the tractor group of Allis-Chalmers Mfg. Co. He has been chief engineer at the West Allis, Wis. tractor works since 1939.

Jules C. Laegeler becomes vice pres. in charge of engineering for Frank G. Hough Co., Libertyville, Ill. Formerly chief engineer, he announces two appointments: Keith W. Kampert as chief engineer, product design, and Thorvald Granryd as chief engineer, research and development. . . . Edwin M. Andersen is named sales promotion mgr. for Galland-Henning Mfg. Co., Milwaukee manufacturer of hydraulic and mechanical baling equipment. . . . Thomas A. Burton, project engineer for Union Carbide Chemical Corp., is appointed process industry sales engineer for Flo-Tronics, Inc., Minneapolis.—Don W. Zeigler

Northeast



Thomas A. Hewson in New Post for St. Regis Paper Co.

He becomes asst. vice pres.—technology and will be responsible for administrative control of the following specialized activities: central research and development, technical services and control, technical planning, packaging and converting equipment engineering.

Mr. Hewson joined St. Regis in 1955 and since 1959 has been director of technical planning. A graduate of Massachusetts Institute of Technology, he holds several patents on semi-automatic chemical testing devices.

Arthur Hollander is now chief industrial engineer, Fitchburg Paper Co. Myron Flotow has joined Fitchburgh as director of manufacturing. He was formerly

production mgr., Mohawk Paper Mills.
. . . Robert Walker has joined Fitchburg's plant engineering staff. He previously was an engineer at Eastern Corp., Bangor. . . .



Vokes

O'Neil

Shirley

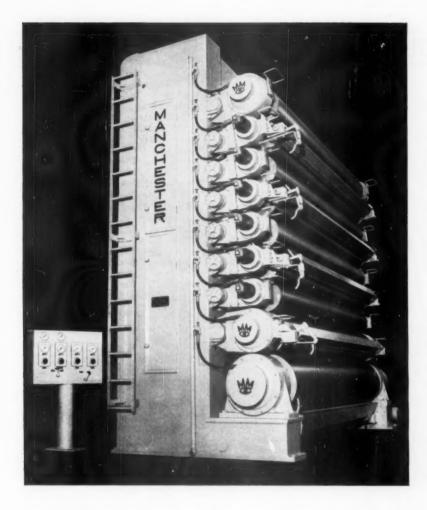
Paper Industry Establishes Educational Foundation

. . . at New York State College of Forestry, Syracuse, Univ. Syracuse Pulp & Paper Foundation Inc. will aid gifted science students who choose pulp and paper as a career in forms of scholarships, grants or non-interest bearing loans. Candidates to be chosen from the 50 states.

Discussing plans and methods are Robert F. Vokes, vice pres. of Black-Clawson Co., Foundation's first president; Prof. F. W. O'Neil, head of pulp and papermaking dept., and Hardy L. Shirley, dean, College of Forestry.

Participants in the program include: St. Regis Paper Co.; Black-Clawson; Concora Foundation; West Virginia Pulp and Paper Co.; F. E. Bahrenburg, Hammermill Paper Co.; Champion Paper Foundation; Finch, Pruyn & Co. Inc.; Hammermill Foundation; J. P. Lewis Co.; The Mead Corp. Foundation; Sealright-Oswego Falls Corp.; Nopco Chemical Co.; Riegel Community Foundation; S. D. Warren Co.; Weyerhaeuser Co., and Hamilton Paper Co.

Eric Smith and Newell Garfield Jr. have been elected directors of Columbia Box Board Mills Inc. Vancouver-born Mr. Smith is president of Alvin H. Johnson & Co. Inc. Mr. Garfield is a partner in William E. Hill and Co. Inc. James L. Salerno was elected vice president i/c finance and administration.



Manchester gives you everything you want in a calender

New Manchester nine-roll, 147 inch face open side calender built for Champion Paper & Fibre Company, Hamilton, Ohio

Here is a truly new open side calender with independent load control of any roll in the stack. Now you can produce a smoother, more uniform finish on a wider range of fine papers. Another outstanding feature is Manchester's air-over-hydraulic loading system. It permits precise pressure adjustments for all rolls... gives you all the advantages of sturdy hydraulic loading... yet uses only ordinary mill air pressure as a power source. No hydraulic pumps, tanks or motor drives needed!

All loading, unloading and *nip relieving* is accomplished through levers within the rugged, all-steel calender frames. Every adjustment is under finger-tip control from a master console.

This new calender is another example of how Manchester builds profits for paper makers through *modern*, efficient design concepts. For the new equipment you're planning now, why don't you call in the Man from Manchester? The Manchester Machine Company, Middletown, Ohio

Manchester . . . profit builders for paper makers



THE MANCHESTER MACHINE COMPANY

PULP & PAPER

Strictly Personal

Wesley N. Stickel, vice pres. i/c research, Texon, Inc., is now responsible for production of all three Texon plants in Holyoke, Russell and Hadley Falls, Mass. George Wood, vice pres., will direct planning and obtaining productive means for new materials and processes. . . .

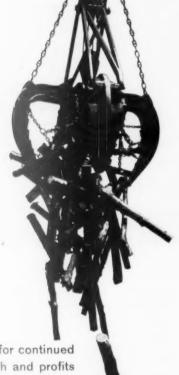
E. G. Stone has been promoted to asst. to the resident manager of the Brewer, Maine mill of Eastern Fine Paper and Pulp Div., Standard Packaging Corp. . . . Earl J. Gaudet succeeds him as production manager, paper, at the Brewer mill. He was previously manager of No. 3 paper machine at Champion Paper & Fibre Co's, Canton, N.C. mill. . . .

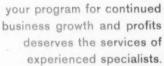
Robert G. Stroud is now purchasing manager, eastern region, Packaging Corp. of America. . . . Maurice D. Mathier steps up as asst. group leader in the de-

velopment group, technical specialties dept., Oxford Paper Co. at Rumford. . . . Urbain L. Doyle joins the dept. as research associate in product engineering group. . . .

Weyerhaeuser Co. has set up a marketing research dept. within its research division and appointed Leonard M. Guss as manager with headquarters in Philadelphia, Pa. He had been with Battelle Memorial Institute for five years. . . . Charles A. Lewis, director of the containers and packaging div., BDSA, U.S. Dept. of Commerce, received the professional award of the Packaging Institute for his major contributions to the field of packaging. . . . Francis X. Lee Jr., controls engineer for Frank W. Egan & Co., has been promoted to sales engineer. . . .

John H. Hinman, chairman of the board, International Paper Co. received the Brotherhood Award of the National Conference of Christians and Jews for "distinguished service in the field of human relations."







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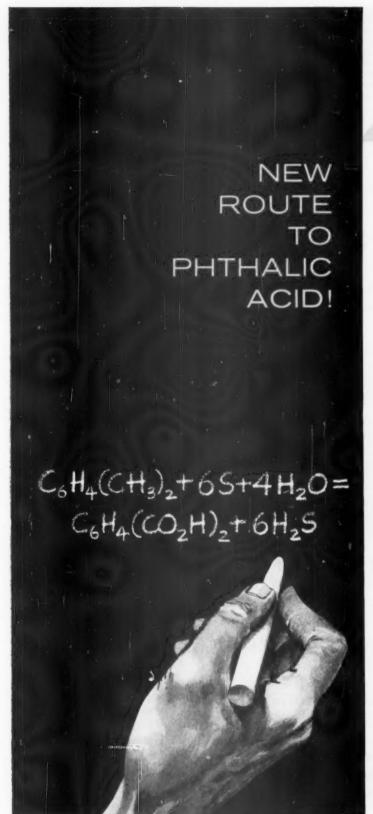


Donald M. Tanguay, Tech. Director Monadnock Paper Mills, Inc.

Dr. Tanguay has his b.s. in physical chemistry from U. of Notre Dame; his m.s. from U. of Heidelberg, Germany and his ph.d. from Yale U. He was previously project leader, research and development, West Virginia Pulp and Paper Co., Luke, Md.

Alfred S. Nalle, special asst. to the vice pres., sales, West Virginia Pulp and Paper Co. has been named asst. director for mobilization planning, forest products div., BDSA, U.S. Dept. of Commerce. Glen S. Boonton is now on the sales staff of the specialty papers div., Gilman Paper Co. He has 20 years experience in sales of specialty papers. Leonard Klanit, who headed Gilman's sales-service dept., steps up as administrative asst. to Robert Bringman, sales mgr., for specialty papers div., and Stephen Orseck succeeds Mr. Klanit.

George O. Trudeau, 49, died suddenly at his home last October. He had been employed by Holyoke Machine Co., since 1947. He was a familiar face at many



SULPHUR helps to create headline products

In a report to the Petroleum Division of the ACS, Dr. William G. Toland of the California Research Corporation recently announced the development of a new method for producing Phthalic Acid, with the following over-all reaction:

 $C_6H_4(CH_3)_2 + 6S + 4H_2O = C_6H_4(CO_2H)_2 + 6H_2S$

Note that the presence of Sulphur right smack in the middle of this reaction is necessary for its completion. The Sulphur leaves the process at this point. The hydrogen sulphide can be oxidized to elemental Sulphur and returned to the initial reaction. It is thus operable in a closed cycle.

According to Dr. Toland, who developed this new route to phthalic acid, the process is simple and capable of high recoveries.

Here is another good example of how strongly Sulphur is in the processing picture. Together with its many derivatives it enters into countless reactions.



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PULP & PAPER - December 1960

mills in the country and at many of the industry's meetings. His loss will be felt by many.

Harold Duffy, general traffic manager of New York and Pennsylvania Co. Inc. recently celebrated 40 years with the company. . . . Glen E. Speidel has been elected vice president of Standard Packaging Corp. and will be in charge of consumer products group. . . .

Frank J. Keating has been appointed vice pres., mills operation, United Container Co. with responsibility for all United mills plus the recently acquired Bicking Paper Mills in Downingtown and affiliated Daring Paper Co., Bridgeport,

Pa. . . . Donald A. Cumfer steps up as general mgr.-mills operations. . . . Container Corp. of America has opened a new Valley Forge marketing and research center in Oaks, Pa. with Henry G. Van der Eb, vice pres. for folding carton operations in charge. E. G. Temple is division mgr., eastern folding carton operations; W. P. Peters, general mgr., research and development; J. D. Scott, general mgr., special products group and R. H. Brown, general mgr., Philadelphia folding carton plants. . . .

J. Robert MacNair has joined the staff of Hayden Wire Works as engineer i/c development of plastic tanks and reinforced plastic pipes. . .

William H. Murdo, technical service manager and N. Warren Hess, senior chemist, Stowe-Woodward, Inc., died in the Electra plane crash in Boston harbor on October 4. They were on their way to S-W's Griffin, Ga. plant. . . .

Michael Kouris, asst. editor of Tappi, has been named technical editor, reporting to R. G. Macdonald, editorial director. He will edit the technical section of Tappi; and will edit Tappi monographs and other selected technical publications.

Mr. Kouris, previously was supervisor of the technical information dept. Visking Co. Div. of Union Carbide Corp.; the Pulp and Paper Research Institute of Canada; and also with Howard Smith & Sons, Ltd., Cornwall, Ont.

A graduate of Trinity College, Dublin, Eire, Mr. Kouris received his m.sc. degree from McGill University in Montreal.

Frank Clawson, regional mgr., Midwest and Northern and New England areas for Brandon Sales, Inc., concentrates now on Northern and New England areas succeeding Wes Price of Orton Corp. Mr. Price has left Orton and Orton and is giving up the Brandon felt account.—Maurice R. Castagne.

IT MADE SENSE TO THEM . . .

HENRY. W. MOOSEKER, General Superintendent West Virginia Pulp and Paper Company, Tyrone, Pa.

ROY L. SHARP, Plant Engineer
West Virginia Pulp and Paper Company, Mechanicville, N. Y.

ROY L. REED, Project Engineer
West Virginia Pulp and Paper Company, Covington. Va.

W. M. Finley, Exec. Vice President Tennessee Paper Mills, Chattanooga, Tenn.

WILLIAM P. MANLEY, Sheeting Operation Supervisor Hercules Powder Co., Hopewell, Va.

C. L. FERGUSON, Mill Manager
Oxford Paper Co., Rumford, Me.

and others ordered

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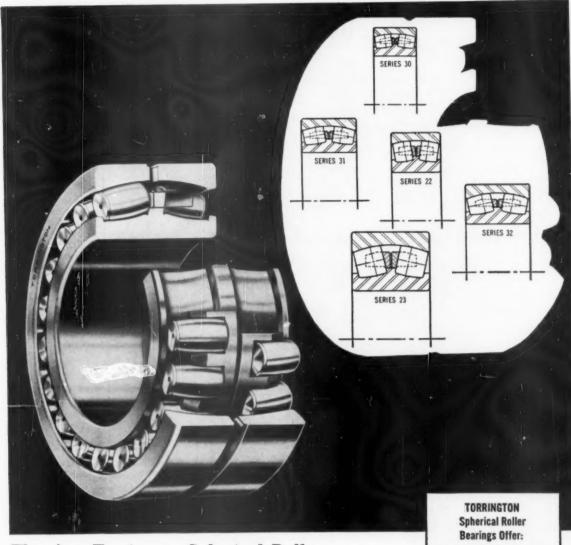
Southern



Named President of Controller's Institute Birmingham Group

Walter R. Williams, Jr., treasurer of Coosa River Newsprint Co., Coosa Pines, Ala., has been named president of the Controller's Institute of America Birmingham, Ala.

The Southern Exposure: Karl O. Elderkin, one of the pulp and paper industry's most well-known figures for the past 40 years, has officially retired as President of Bowaters Engineering and Development Inc. George Hobbs has assumed the presi-



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PULP & PAPER

Strictly Personal

dency (See "Man on the Go", page 168, Oct., 1960 PULP & PAPER.) Mr. Elderkin joined Bowaters in 1952 as vice pres. and gen. mgr. of Bowaters Southern Paper Corp., Calhoun, Tenn. On Jan. 1, 1957 he became the first president of Bowaters Engineering and Development. His list of activities pretty much tells the story of his fine contribution to our industry: director of Bowaters Southern; Bo-

waters Carolina Corp.; Bowaters Engineering and Development; Bowater Corp. of North America Ltd.; The Crossett Co.; the Public Utilities Co., Crossett, Ark.; a former president of TAPPI and recipient of its coveted Gold Medal in 1959 for "outstanding contribution to the technical advancement of the pulp and paper industry." He was cited for his work in the development of the vacuum pickup on

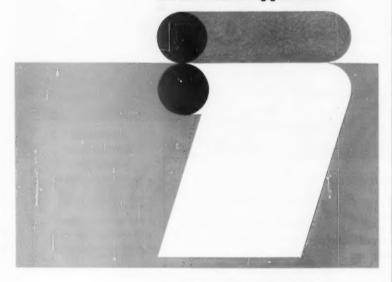
kraft paper and newsprint machines and for the development of underwater wood storage at Crossett and Calhoun.

Ingenuity certainly pays off-Dick Fricton, Marathon Instrument and Control Supervisor and lead man in setting up the instrumentation for the new Marathon board machine at Naheola, Ala., (See PULP & PAPER, Nov., 1960, page 76) recently worked up an interesting walkietalkie set-up so his four sons could converse with their mom, in the hospital after presenting them with a brand new sister, Sharyl Jean. . . . Ivan Kuhns, onetime senior engineer at Hammermill's Erie, Pa., mill, has joined Morden Machines Co. as sales engineer in its Southern region. A former papermaker who switched to sales, Charles M. Bechtler, has been appointed sales promotion mgr. of Standard Paper Manufacturing Co., Richmond, Va. He joined Standard in 1949 as a mill chemist after graduating from the U. of South Carolina.

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Kenneth Damp Assigned Southern Region by Staley Manufacturing

He will serve as paper technical sales representative in the South. Mr. Damp joined Staley in 1957, holds a BS and MS degree in chemistry from Western Illinois State College.

Ernest Lynn Kurth, pioneer southern pine forest industrialist and international authority on forest management died October 26 at Lufkin, Texas. He gave the U.S. its first newsprint mill to manufacture paper from southern pine and for many years was president of Southland Paper Mills, retiring in March 1960 to become chairman of the board. He met the late Dr. Charles H. Herty of Savannah, who developed the possibility of making newsprint from southern pine, at a chemurgic conference, and Mr. Kurth seized upon the challenge, arranged the financing and built the mill. . . .

Ralston Purina Co., St. Louis, Mo., has appointed Southern Sizing Co. of East Point, Ga., sales representative for soy protein products, Pro-Cote and Purina Protein throughout the Southeast.—William F. Diehl Ir.

CIBA



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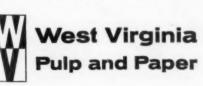
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Calle N,266, Apart. 812, Vedado, Habana, Cuba





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AMERICAN's ground-hugging stability lets you pick up and spot loads over a large radius. Smooth-running anti-friction bearings are used on all constantly turning shafts, gears, and assemblies... even on brake linkage system for immediate response and close feel of the load. Clutches and brakes are larger and cooler-running than other cranes in its class. For more facts on safer, lower-cost-per-cord handling, see your AMERICAN distributor.





Pulpwood

John Liersch, vice president, timber and forestry, MacMillan, Bloedel & Powell River, gave the opening address to delegates to the Pacific Logging Congress in Vancouver, B.C. Retiring president was William McMahan, vice president, Candadian Forest Products, Ltd., who directs operations of the company's Howe Sound Pulp division.

Ernest K. Rabb has been promoted to asst. coordinator for West Virginia Pulp and Paper Co.'s Charleston mill's purchased chip program. . . . Crossett Company, Crossett, Ark., recently played host to 14 European foresters, part of a southern tour held in conjunction with the World Forestry Congress in Seattle, Wash. . . . Lee Gardner has been named management forester for St. Regis' Southern Woodlands Technical control section. Walter Stone is now procurement forester for Continental Can Co. at its new mill in Augusta and also at Southern Paperboard, near Savannah. His assistants: Jim Quitter at Savannah and Tom Leetch at Augusta. . . W. G. Sheppard, formerly district forester at Georgetown, S.C., has been named assistant to William Ernst, Jr., mgr. of West Virginia Pulp and Paper's Southern Woodlands, Summerville, S. C.





Richen

Bonfield

Two Appointed to U.S.D.A. Forestry Research Committee

Mr. Richen, mgr. of northwest timber operations, Crown Zellerbach Corp., Portland, Ore., was named by Secretary of Agriculture Ezra Taft Benson as an industry representative on this 11-member group which also includes government, general public and education representation. This committee facilitates communication between U.S.D.A. and public, advises the dept. on forest research and service programs. G. B. Bonfield, vice pres., American Box Board Div., Packaging Corp. of America, Grand Rapids, Mich., was also appointed to this committee.



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PULP & PAPER

Strictly Personal

E. G. Kilp, authority on pulp-producing woods and forest management, is succeeded as Woodlands dept. mgr. at Ne-koosa-Edwards Paper Co., Port Edwards, Wis., by Robert A. Petry. Mr. Kilp, eligible for retirement, remains on active duty in a staff capacity. His successor has been asst. mgr. since 1954, most recently

in charge of land acquisition. . . . John H. Dieterich, forest fire research specialist, is named to the staff of the U. S. Lake States Forest Experiment Station, St. Paul, Minn. He will conduct studies in the effects of microclimate, fuel type and fuel concentration on fire behavior, as well as in prescribed burning for reducing

logging-slash hazards and improving wildlife habitat. He was formerly at the forest fire laboratory of the Intermountain Forest & Range Experiment Station, Missoula, Mont.

Jay Gruenfeld, asst. land supervisor, Weyerhaeuser Co., Tacoma, Wash., has been elected chairman and Robert G. Helgeson, St. Regis Paper Co. forester, is esct.-treas. of Puget Sound Section of Society of American Foresters for coming year.

Pacific

Sidney M. Collier, who joined Spaulding Pulp & Paper Co., Newberg, Ore. in J1957 as gen. mgr. and became vice presedirector last year, has been named execute presegen. mgr. . . Jack M. Wilcox, mgr. of process equipment div., ESCO Corp., Portland, Ore., skippered his 30 ft. cruiser Tangent II to win 20-mile predicted log race for 2d successive year and thus acquired permanent possession of the trophy. . . .

Promoted at Scott Paper Co. West Coast Div., Everett, Wash.; Erling C. Hesla, sr. project engr., becomes electrical engr.—a newly created position; Albin J. Stumpf and Leonard W. Spencer, both project engrs., advance to sr. project engrs.; Ramon J. Gould, maintenance planning engr., appointed paper mill engr. to succeed Eugene B. Johnson who transfers to Mobile; K. C. Carpenter is the new maintenance planning engr.

Western Kraft Corp., headquartered at Portland, Ore., makes managerial changes at its recently acquired Calif. operations: Gaylerd L. Dales, who was gen. mgr. of Cadillac Container Div., becomes mgr. of the new Product Packaging Dept.; J. Prescott Blount, formerly mgr. of agricultural packaging div. Western Corrugated Inc., San Leandro, named mgr. of container development dept.; James L. Ramstead, former Cadillac sls. mgr., becomes sls. mgr. of produce packaging dept.; C. R. Duffie, res. mgr. of Western Kraft's paperboard mill at Albany, Ore., has been placed in charge of Quaker Container Div. paper mill operations at Richmond, Calif.

William Anderson, formerly of Crown Zellerbach Corp. Camas Div., joins Columbia River Paper Co. head offices in Portland, Ore. as industrial relations mgr. . . . George A. LaHusen, 48, gen. safety supervisor of Crown Zellerbach Corp., Portland, Ore., drowned Oct. 5 while fishing near his summer home at Roche Harbor in San Juan Islands. . . . Andy Deschamps, converting plant supt. at West Linn Div. Crown Z Corp., completes his 45th year with the firm. . . .





Gus Lorenz' Service Cited

Mr. Lorenz, supt. paper machines-wrap at Crown Zellerbach Corp. Camas (Wash.) Div., receives award in recognition of 45 yrs. with the firm. His was highest of 64 senior awards (25 yr. and over) presented to Camas employees Nov. 30.



Nichols

Pierson

Huntington Rubber In Plastics Business

Clifford A. Nichols, exec. vice pres. of Huntington Rubber Mills, Inc., Seattle, Wash., and Charles Pierson, president of Ershig's Industrial Plastics, Bellingham, complete agreement making Huntington exclusive sales agent for Ershig's corrosion resistent fiberglass reinforced plastics. Components of this product line which include hoods, tanks, chests, ducts, piping and other custom-built specialties, have been use-proven in the West Coast pulp-paper industry. This addition broadens Huntington Rubber's scope by adding plastics to its existing industrial line of rubber roll covering and protective coatings.

Joseph Y. Baruh, 92, long-time West Coast paper industry leader and member of a pioneer Calif. family, died Oct. 20 at Beverly Hills. He was recently named director emeritus of Crown Zellerbach Corp. with which he was associated for past 62 years. He is survived by his wife, Alma Hecht Baruh, his sister Mrs. Isadore Zellerbach, nephews J. D. Zellerbach, Crown Z board chairman currently serving as U.S. Ambassador to Italy, and Harold L. Zellerbach, acting board chairman and chairman of CZ executive committee. Mr. Baruh was one of the original directors of Zellerbach Paper Co. and Crown Zellerbach, was elected vice pres. of the latter in 1931 and served continuously on the board until resigning re-. Jack M. Lamb, gen. mgr. cently. . St. Regis Paper Co., Tacoma, Wash., and wife Esther, vacationed in Hawaiian Islands recently-back where they originally met and where his career started in 1921 as engr. for a sugar firm.



Walter J. Krstich, Sales Engineer, Denver Equipment Co.

Mr. Krstich will work in the Western Sales Division covering 11 western states with headquarters in Denver. A native of Akron, Ohio, he is a graduate of the U.S. Naval Academy. Before joining Denver Equipment he was with Goodyear.

At Crown Zellerbach plants: Ralph D. Sievers transfers from St. Francisville, La. to St. Helens, Ore. mill as steam plant supervisor; at Port Angeles (Wash.) Div. Joyce V. Kendall, asst. technical supervisor and John E. Merrill became asst. technical supervisor; Jack D. Williamson, sr. engr. at Camas, moves to Antioch, Calif. div. as project engineer.—L. H. Blackerby.

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B. C. Forest Products Crofton, B. C.

Northwestern Pulp & Power Hinton, Alberta

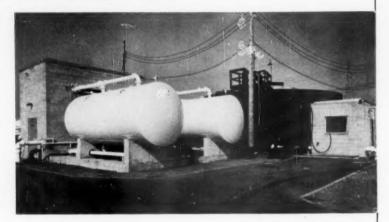
Island Paper Mills
Annacis Island, B. C.

Tennessee Pulp & Paper Co. Counce, Tenn.

Alaska Lumber & Pulp Co. Sitka, Alaska

Ketchikan Pulp Co. Ketchikan, Alaska

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Cosmopolis, Wash.
Longview, Wash. (2)*
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Strictly Personal

Canada

Flemming Heads Canada's Dept. of Forestry

Canada now has a federal department of forestry, and Prime Minister John Diefenbaker has appointed Hugh John Flemming, a New Brunswick lumberman, as minister in charge. Mr. Flemming has had a distinguished political record and was premier of New Brunswick from 1952 until last year.

Creation of the federal department was in response to a widely held opinion that too much responsibility for maintenance of Canada's forests was in the hands of the provinces and that Ottawa was not doing enough to support them in such measures as fire prevention.

In the past, forestry administration at the national level has been jointly shared by two other departments, northern affairs and agriculture, with the forest products division of the department of trade and commerce directing export promotion. In addition, the National Research Council has contributed through technical research.

Various groups in all these departments will be merged, in a sense, in the formation of the new department to be solely devoted to forest administration. A deputy minister has yet to be named. He will be actively in charge of the department's day-to-day operation.

Prof. Thorsten Streyffert, of Stockholm, was a recent visitor to Canada and in Vancouver presented the H. R. Mac-Millan lecture in forestry at the University of British Columbia. He is the retired dean of the Royal School of Forestry in Sweden and a noted author.

A. P. Jewett, president, Abitibi Sales Co., Toronto, recently adressed the National Industrial Conference Board in that city, and declared that the cost-price squeeze resulting from higher production and mounting expenditures would probably continue. He added that some concern was being felt for the short-term market prospects.

John D. Pawling has been made mgr. of manufacturing and engineering services, Hinde & Dauch Ltd., at Toronto head office. He was formerly with Price, Waterhouse & Co. as director of manufacturing services.

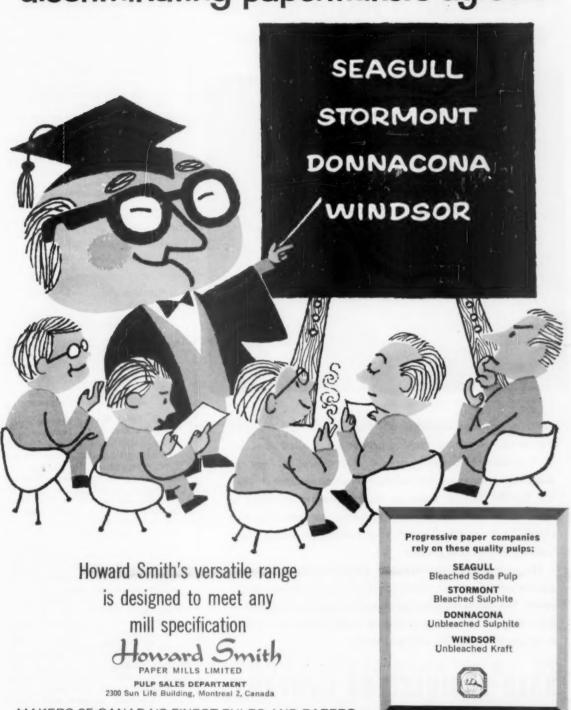
Orval C. Cook, sales mgr., Crown Zellerbach Canada, Vancouver, B.C., is touring Europe, studying markets.

A. (Archie) Welch has been appointed vice president and general mgr., Price Bros. Paperboard Corp., a subsidiary of Price Bros. & Co., Quebec City, which handles all sales of paperboard, kraft and specialty papers manufactured by the Price mills and J. C. Wilson, Ltd. Mr. Welch was formerly general mgr., E. B. Eddy Co. at Hull, Que. Until recently he was vice president, marketing, for J. C. Wilson, Ltd., of which he continues as a director.

J. W. (Jack) Sivers, until recently in charge of public relations for Fraser Companies in Edmundson, N.B., has resigned to join the staff of the Industrial Development Bank in Montreal. He was formerly assistant to Rielle Thomson, public relations director, Canadian Pulp & Paper Assn.

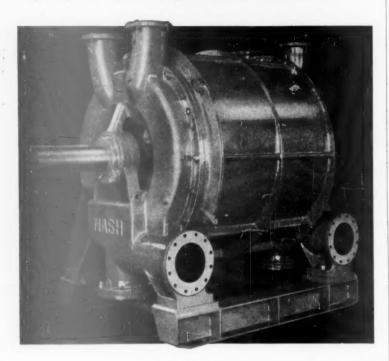


Professor Pulp says: discriminating papermakers agree...



MAKERS OF CANADA'S FINEST PULPS AND PAPERS

Just 3 days lost production of a Paper machine can cost more than the vacuum pumps. That makes dependability the essential factor in pump selection. No pump is more dependable than a Nash



Over a thousand leading mills depend on Nash Vacuum Pumps to insure uninterrupted production. Nash Pumps are built to stand the pounding of continuous operation. They are simple. They have no internal parts in wearing contact. They will handle slugs of water or stock. They are designed to operate at the low speeds necessary for long life and reliability. Don't gamble with your production. Install Nash Vacuum Pumps and be safe.

The new Nash 5308-A shown above, has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

NASH ENGINEERING COMPANY

SOUTH NORWALK, CONN. U.S. A.

in 1938 and founded one of the most successful pulp-paper and lumber enterprises in Western Canada.

Win Patton, industrial relations supervisor at Crown Zellerbach Canada's mills at Ocean Falls, B.C., has left to join the B.C. power commission, and has been succeeded by Dave Bremner, formerly of CZC's converting plant at Richmond, B.C. Doug Lawson, assistant to the industrial supervisor at Ocean Falls, has gone to Elk Falls Co., another CZC affiliate, to replace Andrew Glass, who has moved from Elk Falls to Richmond.

Ian Mahood, formerly asst. gen. mgr. forest operations, MacMillan, Bloedel & Powell River, Ltd., has been appointed mgr. of development, National Forest Products, which controls several lumber operations in the B.C. interior.

J. Mel Jopp, director of engineering, Columbia Cellulose Co., Vancouver, B.C., was one of the speakers at the TAPPI Engineers' meeting in Jacksonville, Fla.

Alf Harvey, townsite manager, Crown Zellerbach Canada at Ocean Falls, B.C., has been elected president of B.C. School Trustees Assn.



A. G. Tafel Named Manager Of CIP's Mill at La Tuque

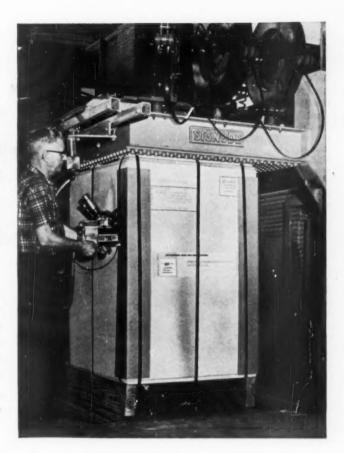
Mr. Tafel joined Canadian International Paper Co. in 1927 at the Gatineau, Que., newsprint mill. He was paper mill supt. there when transferred to Dalhousie as assistant general supt. in 1954. The following year he went to Three Rivers as general supt. and was transferred to La Tuque in 1957 as assistant mill mgr. In his new job he is manager of the company's kraft pulp, paper and board mill.

Maurice Pilon, who succeeds Mr. Tafel as assistant mill mgr., joined CIP in 1939. In 1944, he became assistant control supt. at Three Rivers and was promoted to sulfite mill supt. in 1950. He returned to Gatineau in 1955 as sulfite and bleach plant supt. He was appointed general supt. at LaTuque in 1956.

L. H. Wittenberg succeeds Mr. Pilon as genl. supt. He joined the LaTuque mill in 1939 and was supt. of the kraft mill when CIP acquired the assets of Brown Co. in 1954. Two years ago he was appointed assistant genl. supt.—Charles L. Shaw

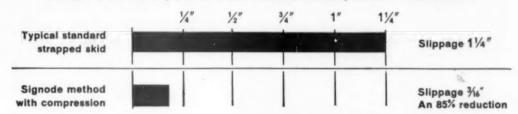
Compression strapping the Signode way reduces paper slippage 85%

This skid of paper is being strapped on a new Signode CS20-1 press which compresses the load while the worker applies steel strapping with a fast new Signode power tensioner-sealer tool. The paper will arrive at destination in top condition. The mill has improved its product, yet reduced its costs per skid for time and materials!



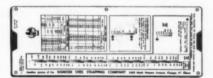
Here's Proof!

PAPER SLIPPAGE, STRAPPED PAPER SKIDS, AFTER 5 IMPACTS



Write today for all the facts on this important new development from Signode.

New free steel strapping calculator helps you buy steel strapping at least cost according to your needs, and shows new strength figures for Signode steel strapping. Write for yours.





First in steel strapping

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George B. Hills, Jr., vice pres. Martin Paper Products division of MacMillan, Bloedel & Powell River, Ltd., is living in Vancouver again following decision of the parent company to move Martin's head office from Winnipeg to the Phillips Building in the B.C. city. Mr. Hills was formerly in the new development and planning department of Powell River Co. Until recently he was gen. mgr. of Martin as well as vice pres. He has relinquished that part of his duties in favor of Gen. Mgr. Harold V. Townsend who was with Martin before that company was acquired by Powell River Co. R. C. Lemon, formerly production mgr., at the New Westminster plant, is now manager.

J. S. Johannson, MacMillan, Bloedel & Powell River, Ltd., has been appointed a director of the Canadian Exporters Assn.

James Gow Wyllie has been named to the newly created position of vice pres., finance, St. Lawrence Corp. in Montreal He was formerly a vice pres. and controller of Canada Steamship Lines and at one time was assistant gen. mgr. of Bowaters Newfoundland Pulp & Paper Mills as well as sec. treasurer, Bowater Corp. of North America.



W. D. Kerr, Research Dir. for Fraser Cos. Ltd.

He was formerly supervisor of the pilot plant at the Atholville, N. B. laboratories and succeeds **Dr. B. J. Trevelyan**, who resigned recently.

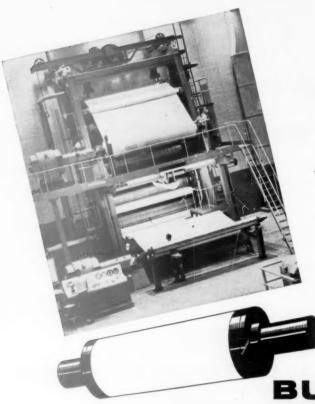
A chemical engineering graduate (with honors) from the Univ. of Toronto, Mr. Kerr studied pharmaceutical chemistry at the Univ. of Wisconsin, He joined Merck & Co. in 1951.

In 1953 Mr. Kerr became associated with the Pulp & Paper Research Institute of Canada, Montreal, as a project supervisor in the Chemical Pulping div., becoming chief of the operations group.

While at the Institute he represented it on both the Sulfite and Alkaline Pulping commmittees of the Technical Section, CPPA. He joined Fraser in 1958 as pilot plant supervisor.

Hugh K. Joyce is now asst. general manager, Bowaters Mersey Paper Company Ltd. Toronto-born, he went to Upper Canada College there; served five years as an officer in the Royal Canadian Navy, and he graduated from University of Western Ontario, London with a degree in business administration and the university's gold medal for general excellence. Mr. Joyce joined Mersey in 1949; was successively employment and safety supervisor, personnel manager, general executive assistant, and assistant to the general manager.

R. L. Fraser is now mill manager, Iroquois Falls Newsprint Division, succeeding G. J. Morrisette, who has retired. Mr. Fraser has been associated with Abitibi at the Ste. Anne Paper Company, Limited, Beaupre, Quebec; executive offices of the company in Toronto, and for the last seven years as mill manager, Manitoba Paper Co. Ltd., Pine Falls, Manitoba.



GREAT NAMES in the Paper Industry: Oxford Paper Co.

Oxford Paper Company's new Supercalender at Rumford, Maine, is equipped with Butterworth Calender Rolls.

Butterworth Rolls, used by the leaders in the Paper Industry, are made to specification and checked for hardness, smoothness, and density before delivery. You can see the difference in finer finishes, extra hours of service without turning down or refilling.

Furnished new or refilled for every calendering need. And you get Butterworth Rolls at competitive prices. Quotations on request.

H. W. BUTTERWORTH & SONS COMPANY Bethayres, Pa. Division of Van Norman Industries, Inc.

BUTTERWORTH

More than 60 years of Roll-Making Experience

Performance makes the world of difference



Fig. 1893—Large Alloy Cast Iron Paper Mill Service Gate Valve for 200 W.O.G. Body and bonnet are 3% nickel iron; stem and seat rings are Type 316 stainless steel; solid wedge disc is Ni-resist. Fig. 2192—Large Ni-resist Swing Check Valve for 200 W. O.G. Bolted flanged cap. Stainless steel (Type 316) seat, disc, disc hinge, pin and lock nut. Fig. 2195—Small Niresist O.S.&Y. Gate Valve for 200 W.O.G. Wedge disc, seat and stem are Type 316 stainless steel.

For their resistance to corrosion, erosion, heat and wear, Powell Ni-resist* and 3% Nickel Iron Valves are especially made and recommended for pulp and paper mill service. Also—valves are available in Stainless Steel, Nickel, Monel Metal*, Hastelloy+ Alloys, Aluminum, etc., to control the

flow of acids, alkalies, organic solvents and gases. So if you have a flow control problem, Powell has the right valve to solve it. For complete information and literature, contact your Powell Valve distributor (there's one in all

major cities) or write directly to us.

*Registered trade names of The International Nickel Company, †Registered trade names of Haynes Stellite Company

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THE WM. POWELL COMPANY . DEPENDABLE VALVES SINCE 1846 . CINCINNATI 22, OHIO

THE MAN & THE DRIVES



FROM WESTINGHOUSE

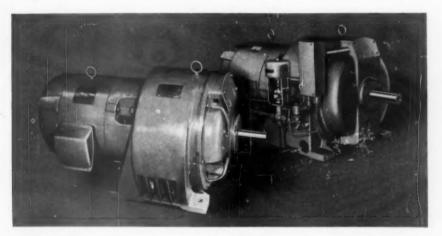
Mr. Westinghouse and MagnaFlow Drives Bring Simple Solution to Speed Control Problems, Save Money and Space, Too!

Westinghouse MagnaFlow* electromagnetic drives—air or liquid cooled—provide infinitely adjustable speeds from standstill to top speed with regulation guaranteed at $\pm 2\%$ of top speed over a 17-to-1 speed range (even closer regulation when desired). Control is smooth and stepless.

These compact drives, having a minimum number of parts, are built for rough, trouble-free service. The unique electromagnetic coupling maintains adjustable output speed without the use of pulleys, belts, brushes, commutators, slip rings or rotating windings. A rugged Life-Line® "A" motor supplies reliable a-c drive power. No power converting equipment needed—only a small, static exciter and an operator's control station. Initial cost is low; installation—easy and inexpensive.

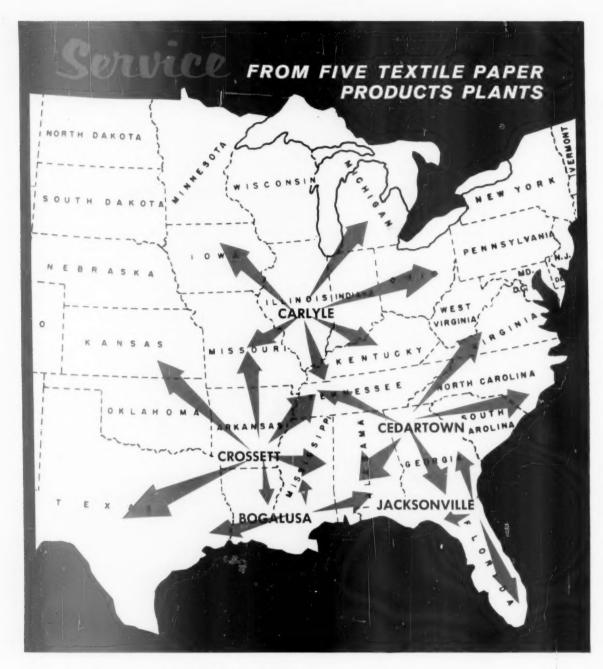
Your Man from Westinghouse is ready now to help you apply MagnaFlow drives . . . and any other drives you may need. Call him . . . or write for a copy of Westinghouse MagnaFlow Electromagnetic Drives (B-7875), Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pennsylvania. You can be sure . . . if it's Westinghouse.

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MagnaFlow drives—air cooled (foreground) and liquid cooled—are available in various horsepower ratings for winders, conveyors, fans, pumps, extruders and other machinery in all industries.





NOW YOU'RE IN EASY REACH for quick deliveries of paper cores from Textile Paper Products. Check our locations above, consider the fact we use our own fleet of trucks, you'll see you can depend on Textile Paper Products for fast sure deliveries.

BUT FAST SERVICE IS NOT ALL! You get more crush resistance per dollar from our "Ironfibre" cores than you've ever known, and Textile Paper Products can fully supply you with machinery to solve all core-room problems.



Your best source for Paper Mill Cores, Cellophane Cores, Free Film Cores and Camelback Shells. Also supplies for Textile Mills.

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HOME OFFICE: CEDARTOWN, GA. . PLANTS: CROSSETT, ARK.; BOGALUSA, LA.; JACKSONVILLE, FLA.; CARLYLE, ILL.

New Equipment Section

Curl Tester

... Many Applications



Applications: For determining amount of curl that occurs in paper when relative humidity is changed. (Typical application: gummed paper industry, where paper with remoistenable type

gum is used.)

Advantages: In making curl test, paper sample (illustration) is conditioned to 50% relative humidity for 15 min. or longer. Amount of curl is recorded. Next, sample is held at 20% RH for same period and curl again recorded. Difference represents how well paper has been broken.

Specifications: Basic mechanics remain same in variety of applications. Supplier: Testing Machines Inc., 72 Jericho Turnpike, Mineola, L. I., N. Y., Tel: Ploneer 7-7466.

Live Bottom Bins Feed Difficult Materials



Applications: Especially suited to provide continuous soaking and feeding of wood chips in manufacture of cold caustic pulps or similar applications that require positive feeding to production units.

Advantages: Bins designed to meet full A. S. M. E. requirements are of liquid-tight construction.

Specifications: Bottom consists of

heavy-duty continuous welded screw conveyors, gear-driven in groups of three from variable or constant speed drives. Live bottom sections or complete bins available in wide range of sizes in standard steel or stainless steel construction.

Supplier: Sprout, Waldron & Co. Inc., 130 Logan St., Muncy, Pa., Tel: LIncoln 6-3111.

Crawler Tractors . . . Complete New Line



Applications: For logging, general woods use, materials handling, etc. Advantages: New model (1010 and 2010) comprise largest selection and power sizes ever offered by John Deere. Four- and 6-cylinder valve-inhead engines operate at speeds up to 2,500 rpm, "providing constant efficiency through full throttle range". New hydraulic controls to increase work output and quality included in line. On crawler-loader units, single lever controls all movements of both loader lift arms and bucket. On both crawlers, new T-bar control for allhydraulic bulldozers command four operating functions-angle, tilt, lift and cut. Model 1010 is said to have "built-in durability with its high horsepower per pound of weight, lugging and a direction-reverserequipped transmission (optional) for quick maneuverability

Specifications: Available in 40- and 50-engine hp sizes. (Wheel tractors include four models of 40, 50, 60 and 85 hp.) All tractors have powermatched equipment. Gasoline or Diesel options offered. Equipment includes backhoes, loaders, bulldozers, mowers, trailing log arch, integral

log arch and log loader.

Supplier: Deere & Co. (Rey W. Brune), 3300 River Drive, Moline, Ill., Tel: MOline 4-4311.

Bow Expander Roll . . Utilizes Thin Water Film



To uniform. Applications: give smooth, even spreading action over every increment of face width.

Advantages: Aquatrol expander incorporates new principle of operation, simply using thin water film as a bearing. This eliminates bearing maintenance and failure. With only one moving part, roll has nearly frictionless rotation. Only moving part is rotating rubber sleeve that floats on water film. Rubber sleeves can be replaced in minutes, says manufacturer. Unit obviates need for considerable inventory of replacement bearing rolls. Supplier: Rodney Hunt Machine Co., Industrial Roll div., Orange, Mass.

Wall-Mounted Chlorinator Simplified Design Concept



Applications: For industrial water and waste treatment facilities.

Advantages: Series 3600 features Safety Stack regulator within which all components are housed, reducing frail piping and connections that are potential leak sources. Other features: shut-off valve to seal chlorine supply from chlorinator during inoperative periods; isolating valve, preventing traces of water from entering chlorin-

ACRO-SMOOTH

Slashes Truck Maintenance 55%

A new concept in truck design . . . with step-less speed control . . . demountable electrical and hydraulic controls . . . easier service accessability . . . plus, a host of other important features that can halve your maintenance. Eliminate accidents . . increase work output with ELPAR's new "Acro-Smooth", 4,000, 5,000, 6,000 and 7,000 lbs. capacity.

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ELWELLPARKER
ELECTRIC COMPANY

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ator due to ejector back pressure; differential pressure regulator to maintain stable drift-free chlorine gas feed despite wide pressure variations. Unit is housed in rigid fiber glass cabinet to protect against corrosion.

Specifications: Manually-operated unit maintains accuracy of ±2% of feed rate over 20:1 range in flow. Snap-in flowmeter tube allows capacity changes from 3-200 lb. chlorine gas per day without use of tools. Total weight: 65 lb.

Supplier: Fischer & Porter Co. (Daniel Udell), 670 Jacksonville Rd., Warminster, Pa., Tel: OSborne 5-6000.

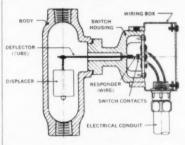
Stock Metering Pump ... Delivers Uniform Flow

Applications: Rotary positive displacement unit delivers uniform flow of stock per revolution.

Advantages: Unit capable of handling high-consistency stock and stock containing any quantity of air. For batch operation, stock is metered by running pump at constant speed for given period of time. Volume of stock pumped directly proportional to speed. Continuous metering accomplished with variable speed drive. Ability to operate in reverse provides application for couch pit, broke beater and pulp mill installation. Plugged suction lines cleared by reverse flow. Specifications: 3-in.—25-100 gpm; 5-in.—55-200 gpm; 6-in.—110-385 gpm; 8-in.—210-765 gpm.

Supplier: Krofta Engineering Corp., 58 Yukon Ave., Lenox, Mass., Tel: 740-W.

Sensing Device . . . Unique Element Employed



Applications: For indication or control of level, flow, density or temperature in process tanks, piping and reactors. Advantages: Unit employs patented W-I-T (Wire in Tube) element for transmitting motion through a pressure-tight wall without bellows, seals or stuffing boxes.

Specifications: W-I-T element consists of flexible, curved tube containing spring wire. Deflection of end of tube by change in level, flow or other variables causes rotation of wire, which may either indicate the change or automatically operate a switch.

Supplier: Yarnall-Waring Co. (William Miller), 102 E. Mermaid Lane, Philadelphia 18, Pa., Tel: CH 8-2600.

Air Make-Up Units . . . Wide Capacity Range



Applications: Packaged units for use wherever outside air must be brought into plant to replace air exhausted in processing operations.

Advantages: Each of the seven available units comprises galvanized sheet metal enclosure, one end of which fits outside wall opening. Outside end equipped with intake louvers, bird screens, shut-down dampers; other end with fan that draws outside air into plant. Gas burner (operating on natural or manufactured gas) heats winter air to 80°F prior to inside distribution. Complete gas safety controls supplied with each unit.

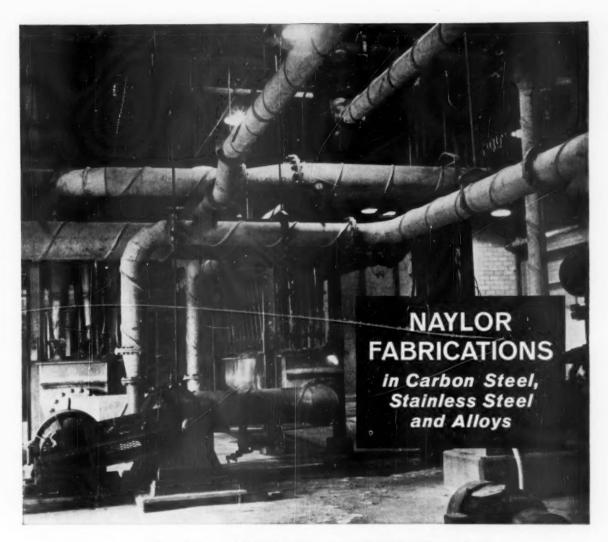
Specifications: New units available for supplying 20,000, 30,000, 40,000, 50,000, 60,000, 70,000 and 80,000 cfm. Enclosure measures approximately 7 ft. high, 7 ft. wide and 8 ft. long. 3-in. insulation eliminates winter condensation.

Supplier: J. O. Ross Engineering div., Midland-Ross Corp., 730 Third Ave., New York 16, N. Y., Tel: PLaza 9-3353; Carrier-Ross Engineering Co. Ltd., London, England.

Centrifugal Pumps . . . Product Line Extended

Applications: For flow control on process lines.

Advantages: Line now includes smaller frame-mounted units with open impellers. Pumps equipped with new instant control for variable capacity and head requirements. Control system uses pneumatically-operated piston to replace original gear train mechanism. ACAP pump re-



... In Line With Paper Mill Needs!

Geared to your piping requirements, NAYLOR fabrication service can provide paper mill pipe, fittings and special fabrications to your exact specifications —from carbon steel, alloys or stainless steel. NAYLOR pipe sizes range from 4" to 30" in diameter and wall thicknesses from 14 to 8 gauge. Special fabrications from 3" to 44" in diameter and wall thicknesses up to 3%". Standard fittings are available from stock.

Write for Bulletin No. 59 or send specifications for quotation.



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Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.



In extra close quarters, there's nothing that'll beat these new Chain Wrenches for getting the job done. Fast, ratchetlike action in either direction... from either side. Give tight grip without crushing. Large, easy-tograb end ring for fast chain adjustment. Tempered steel chain

locks securely...releases quickly. Rugged, comfort-grip, I-beam handle, guaranteed not to break or warp...handy hang-up hole.

Light and easy to use, these new received Chain Wrenches do everything a regular wrench can do . . . and much more. Call your Supply House and get one today!



NEW EQUIPMENT

duces flow by means of opening clearances rather than valve throttling or slowing pump speed to improve mixing, eliminate plugging, save power and reduce air binding.

Specifications: Available in capacities from 50 to 45,000 gpm at heads to 270 ft. Units offer choice of three automatic signal systems for controlling volume, pressure or level, plus manual control over wide range.

Supplier: Allis-Chalmers Mfg. Co., 1126 S. 70th St., Milwaukee I, Wis., U. S. A., Tel: SPring 4-3600.

Alarm Rotameter

... Two Models Available

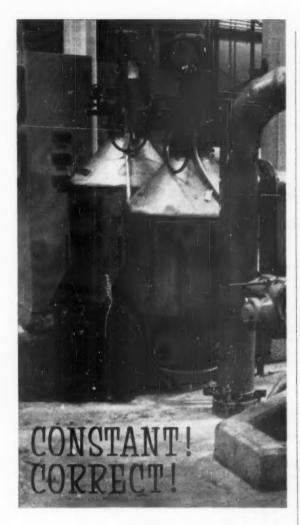


Applications: For measuring fluid rate of flow and to indicate abnormally high or low flows by electronic detections

Advantages: SK electronic alarm rotameters are made to activate a warning light or alarm device and will start or stop a pump, motor or control unit. Model E, which requires manual reset, can be used with two sensing coils of high and low alarm settings. Model EV, employing automatic reset, is used with one coil to detect deviations above and below a desired flow condition. Series 18200-C rotameters provides "high accuracy for critical applications. Units are simple in design and easy to maintain."

Specifications: Instruments employ a standard rotameter with 5- or 10-in. or 600-mm tube and a high-frequency pick-up sensing coil mounted flush against the metering tube. Coil is adjustable over full range of the scale and is connected by cable to the electronic alarm.

Supplier: Schutte & Koerting Co., Dept. M-T (Instrument div.), Cornwells Heights, Bucks County, Pa.



Without attention, without variation, without let-up— DeZurík Stock Consistency Regulators control consistencies in mills all over the world.

These DeZurik Regulators—Pipe Line type—handle the full volume of stock. Two other types—Stuff Box and Pan—adapt to a wide variety of installations and tonnages! They're guaranteed to hold within limits of plus or minus .1 %—and many are holding to plus or minus .02 %!

Get more information from





New Equipment

Moisture Analyzer ... High-Speed, General Purpose



Applications: For process and quality control systems; especially for positive moisture control in processing of paper, textiles, etc.

Advantages: Said to be the only meter of its type, Model HFR-4E employs a new method of moisture determination by means of radio frequency power absorption and "offers laboratory accuracy under factory condi-tions." Claimed foolproof and easy to operate, instrument provides uniform and reproducible measurements continuously in stream as well as in batch or sampling techniques. Manufacturer says analyzer provides high quality control, fast production, low costs and uniformly high quality.

Spec.fications: Moisture content range: 0-80% (higher for some materials); accuracy: 0.001-0.5%. Tests are instantaneous. Material tested not chemically or physically changed. Unaffected by normal variations or by capacitance. Of unitized construction, Model HFR-4E is rugged and

Supplier: Boonton Polytechnic Co. Inc., Dept. 140, P. O. Box 125, Boonton, N. J.

"Massive" Barker . . . for Rugged Conditions

Applications: Designed especially for handling very heavy and knotty West Coast logs, as well as hardwood. Advantages: Model DC-8 is built for extremely rugged conditions and uses heavy-duty bull wheels, reversible

and variable in speed. The barker uses shaver, scraper or flail head, powered by a 50-hp motor. Hydraulic unit controls speed and movement of barking head, as well as the built-in log kicker.

Specifications: Barker handles logs from 6 to 60 in. in dia., 6 to 28 ft. in length. Larger model is available for logs of from 12 to 80 in. in dia. Bull wheels, on 415/16-in. shafts and bearings, are driven by 10-hp electric

Supplier: Soderhamn Machine Mfg. Co., Talladega, Ala.

Heavy-Duty Tensioner . . . with Unlimited Take-Up



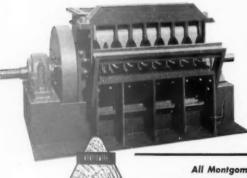
Applications: For steel strapping of pulp, paper, wastepaper, etc.

Advantages: Model TH is described by the manufacturer as a fast, manual

JACKSONVILLE BLOW PIPE COMPANY announces the

NEW K-C Model of the marvelous MONTGOMERY BLO-HOG (pat. pending)

ESPECIALLY DESIGNED FOR PAPER MILL SERVICE



- Minimum of down time and maintenance.
- Punch and die action.
- Tramp steel protection with replaceable shear pins on outside of machine.
- Grinds any kind of bark and billets, wet or dry.
- Rugged, welded steel construction.
- Interchangeable teeth.
- Replaceable anvil tips.
- Replaceable abrasion resistant steel wear plates
- Hard surfaced teeth and anvils.
- Capacity from 31,000 lbs.-hr. with 75 hp. to 175,000 lbs.-hr. with 300 hp.
- Capacities allow for 250% surges.

OTHER MODELS ARE AVAILABLE FOR RE-CHIPPING AND BULL SCREEN REJECTS

All Montgomery products are guaranteed to do the job they are sold to do.

JACKSONVILLE BLOW PIPE CO. Jacksonville, Florida

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Dryden=Quality Quality=Dryden

Our customers tell us:

"Dryden is the new standard

by which all pulps are compared."

At trade conventions, when the subject of "Quality" comes up, paper men always start with talk of Dryden.

As one customer recently told us, "Dryden is the new standard by which we compare all other pulps. When a new pulp comes along, our research people compare it with Dryden."

Our friend was referring to Dryden Bleached Sulphate Pulp, but the same can be said for Dryden's unbleached, electrical, and other specialty pulps. Whether you want strength, or brightness, or cleanliness, or purity, Dryden pulps are unsurpassed.

Have you checked the "QUALITY=DRYDEN" equation in your own laboratories?

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Northeastern Paper Sales, Inc.

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Where can faster, more accurate screening make your process more profitable?

In the pulp and paper industry, SWECO Vibro-Energy Separators have become the standard for continuous accurate separation of screenable material. Because of their high capacity, efficiency and range of applications, they are used in 78 major plants in the paper industry for screening clay slips, starch solutions, paper coatings, adhesives and other materials.

In the manufacture of pulp (sulphite, sulphate, soda and groundwood pulp processes are basically similar insofar as screening operations are concerned), there are at least three operations where SWECO Separators can be used profitably: separation of bark from water, dewatering of rejects, separation of solids from effluent.

A sweco District Engineer will be glad to go over flow sheets of your process with you, show where sweco Separators can make more profit for you, and give a demonstration of a sweco Vibro-Energy Separator in your plant with your process materials. Write Department 7-19.

Sweco Southwestern Engineering Company, 4800 Santa Fe Ave., Los Angeles 58

Engineers . Constructors . Manufacturers 1. Hydraulic Barker 2. Waste 3. Sewer 4. Mechanical Barker 5. Chipper 6. Bin 7. Digester 8 Blow Pit 9. Washing 10. Solid Waste 12. Thickener 13. Bleacher 14. Rejects to Refiner 15. White Water 16. Wash Tank 17. Machine Chest 18. Pulp Drier Possible Sweco Separations Other Separations Process Flow Optional -

action strapping tool with selfenergized feed wheel that holds high tension. The unit takes strapping directly from the coil and "saves a foot or more of strap every time it is used." Any type seal can be used, and the seals can be placed either in front or behind the tensioner.

Specifications: Tensioner weighs 6 lbs. and takes strap sizes from $\% \times 0.028$ in. to $1\% \times 0.050$ in.—waxed, painted or coated.

Supplier: Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill., Tel: ARmitage 6-8500.

Motor Mounts . . . All-Steel, Pre-Drilled



Applications: For mounting motors directly to the steel frame of Falk shaft-mounted, flange-mounted and screw conveyor drives in the 1/4- to 30-hp range.

Advantages: Weldments pre-drilled to accommodate all rerated NEMA footmounted motors within the rated capacity of the reducers, thus eliminating expense ordinarily required to design and construct motor bases and foundations. Motor can be mounted in almost any position around perimeter of reducer. Ease of maintenance is claimed. Belt tension maintained by adjusting screws in base plate. Balanced design is said to result in zero reaction from belt pull at headshaft bearings, reducing bearing loads on driven machine.

Supplier: Falk Corp. (Bulletin 7100), 3001 West Canal St. (Box 492), Milwaukee 1, Wis., Tel: DIvision 2-3131.

Torque-Flow Pump

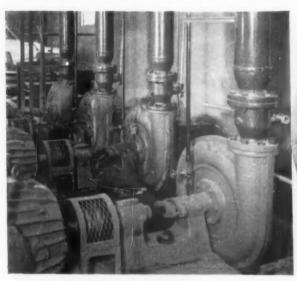
Four-page bulletin (P10-B44) describes varied industrial applications of non-clog unit. Uses in pulp, paper manufacture cited. Pump said to be "highly abrasion resistant, yet gentle enough to handle delicate materials." Copies available from WEMCO, division of Western Machinery Co. (sales promotion dept.), 650 Fifth St., San Francisco 7, Cal.

amesbury Double-Seal



BALL VALVES*

Most VERSATILE Valve In The Mill!



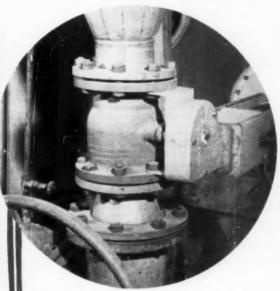
Jamesbury installation at Mead Corporation Chillicothe Plant

As varied as the valving requirements are in pulp and paper processing, the Jamesbury "Double-Seal" Ball Valve is meeting them successfully. Jamesbury offers a functional, efficient, economical Ball Valve which has proved itself in performance in many major installations such as the examples shown above.

Jamesbury Ball Valve Versatility Is Proving Itself In These and Other Services

Spent Acid Lines * Sodium Dioxide * Calcium Hypochlorite CO2 * Sampling Lines * Stock Lines * Bleach Lines * Liquor Lines H₂SO₄ * Black Liquor Recovery Service * Kraff Mill Digester Service * Chlorinated Stock Service * Brown Water SO₂ Service Instrumentation Lines * White Water * Water & Pulp Grinder Water in Filtration Plant * Digester Gas-Off * Digester Blow Service * Vacuum Service * Power Boiler * Gas Service General Caustic Service * Alum Lines * White Liquor Fill Vortrap Drain * General Air Service * Kaolin Clay Service * Paper Filler Service * Glue & Paste Service * Pilot Laboratory * Demineralizer Coating * Color Rooms * Paper Machine Showers * Hydrogen Gas Service * Boiler Water Treatment System * Ash Elimination Dry Chlorine Service * Starch System.

227-0 *Patented



Jamesbury installation at Weyerhaeuser Longview Plant

GREATEST RANGE OF BALL VALVE SIZES AND MATERIALS AVAILABLE.

Jamesbury "Double-Seal" Ball Valves are available in Types 303, 316 and Alloy 20 Stainless Steels, Carbon Steel, Bronze, Ductile Iron, Aluminum and PVC. Other materials on secial order.

Interchangeable seats and seals are available in "Teflon", Nylon, Buna-N, Neoprene, Hypalon and natural rubbers. Pneumatic, Hydraulic and Electric Motor Operators to fit Remote Control Requirements.

SIZES

Screwed End Flanged 1/4" through 3"
1/2" through 10"
150# and 300# series

Send for Jamesbury's Pulp and Paper Brochure.

JAMESBURY CORP. NEW STREET, WORCESTER, MASS.
Distributors in Principal Cities



"LUBRIPLATE greatly reduces unnecessary wear and prolongs the life of machines. It has reduced customer calls for service to a minimum. Our Service Engineers can readily spot machines that have had other than LUBRIPLATE Lubrication, as these machines do not give the service they should."

TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose. LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" ... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5. Ohio.



Literature

Elevated Steel Tanks

Design and function of elevated steel tanks for water storage described in new brochure now available from Chicago Bridge & Iron Co. Twenty-page booklet emphasizes Horton spheroidal, radial cone and ellipsoidal tank designs in capacities ranging from 15,000 to 3,000,000 gal. Included are illustrations of structures now in service, as well as tables of standard capacities. Contact CB&I, Advertising dept., 332 S. Michigan Ave., Chicago 4, Ill.

Electric Truck

Four-page folder describes firm's new Model F-26TA-2 electric fork truck with 2,000-lb. capacity. Unit designed for fast tiering of unit loads under restricted warehousing conditions. Maximum efficiency is claimed to result from "outstanding maneuverability with short turning radius." Includes engineering drawings, charts, photographs, specifications, design and operating data. Write to Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3. Ohio.

Continuous Causticizing

Technical paper describes current trends in continuous causticizing practice. Four-page bulletin covers green liquor clarification, dregs washing, slaking and causticizing, white liquor clarification, white liquor polishing, lime mud washing, lime mud de-watering, lime calcination, pumping. Photographs, diagrams, flow-sheet. Write for technical reprint No. 3321 c/o Dorr-Oliver Inc., Stamford, Conn.

Fittings, Flanges

Seamless welding fittings and flanges described in 8-page brochure FB-502A, covering carbon, alloy and stainless steel construction. Includes charts of standard sizes and schedules according to ASA B36.10 and ASA B36.19. Also, breakdown of dimensional tolerances, illustrations of most commonly produced units, chart of sizes and types. Copies may be obtained from Tubular Products div. sales office, Babcock & Wilcox Co., Beaver Falls, Pa.

Nip and Crown Testing

Sto-Foil is a new and simplified method of testing both the nips and crowns of rubber-covered rolls. It is described in a product bulletin that includes procedure for taking impressions with aluminum foil. Contact Stowe-Woodward Inc. (Product Service dept.), 181 Oak St., Newton Upper Falls, Mass.

Reactors

Twelve-page Bulletin 971 describes the "E" Series reactors and highlights a recent major construction improvement. The series, which is available in 50- to 2,000-gal. capacities, is now being fabricated with Glasteel 59. This glass is said to have 30% more thermal shock resistance and 20% more resistance to abrasion than previous glassed steels. It can be used with all acids (except hydrofluoric) at temperatures to 350°F. without corrosion. It is also resistant to most alkalis at moderate temperatures. The bulletin describes in detail the "W" drive, used with smaller vessels, and the new BH drive, standard with the 1,000- to 2,000-gal. sizes. Accessories are described and dimensioned linedrawings and material and construction specifications given Contact Advertising dept., Pfaudler Co., 1096 West Ave., Rochester 3, N. Y.

Control Valves

DeZurik's complete line is described in Bulletin 150. Listed are valve bodies and actuators and the accessory line; valve sizing data are also included. A complete description of the eccentric principle is diagrammed and primary advantages of the valve given. Write Dept. CV, DeZurik Corp., Sartell, Minn.

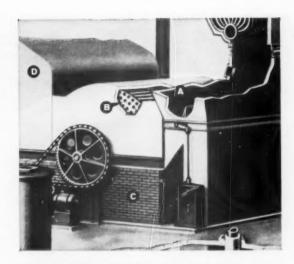


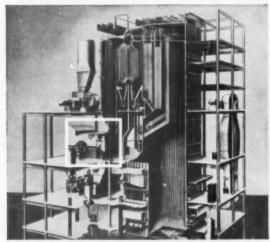
■ VAPO SYSTEMS method of conditioning paper is the time-proven method of properly and uniformly adding the desired moisture content to your sheet. VAPO SYSTEMS units are proven spraying surface materials as Starch, Casein, Wax, Clay, etc. Mills report that Vapo Systems paid for themselves in less than a year. ASK ABOUT IT.

Photo shows one of several installations in a large mill.



VAPO SYSTEMS 136 Home Ave. Villa Park, III.





Cutaway view of a large C-E Chemical Recovery Unit (lower left) equipped with dual Cascade Evaporators. In the evaporation process (upper left), flue gases, after passing through economizer, are divided by damper (A) between upper and lower Cascades. Cylindrical tube bundle (B) with sealed tube ends rotates slowly in a bath of hot liquor (C). Hot gases passing over the wetted tubes pick up moisture and leave the Cascade at duct (D). The amount of economizer surface contacting the flue gases is varied automatically - adjusting temperature and evaporation rate.

Why CASCADE Evaporators?

When coupled with an electrostatic precipitator, the C-E Cascade Evaporator affords the utmost in dependable, low-cost chemical collection and liquor concentration. For example . . .

Automatic controls provide exceptional flexibility of operation. With these controls, furnace stability is easily maintained at a high level, even though the density of liquor entering the evaporator may vary widely. And — because the Cascade Evaporator is mechanically simple and efficient — it performs with a minimum of power consumption and personal attention.

Why settle for less when you specify evapora-

tors? The C-E Cascade Evaporator is your most practical liquor-concentrating method in the long run. The unit is standard in C-E chemical recovery installations and is recommended for new and existing systems of all makes. Write or call the Paper Mill Division in New York for particulars.

COMBUSTION ENGINEERING

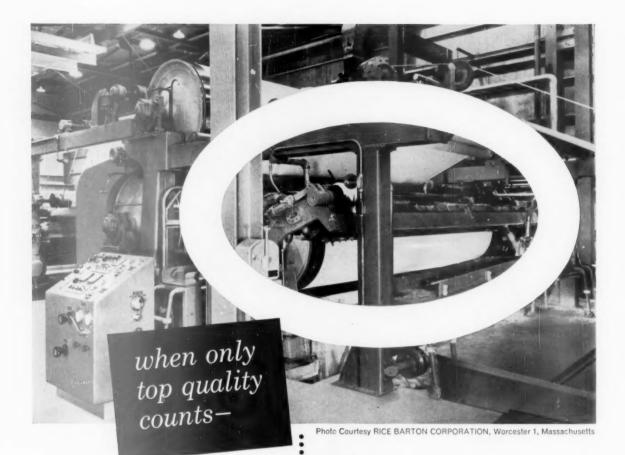


General Offices: Windsor, Conn.

New York Offices: 200 Madison Avenue, New York 16, N. Y.

CANADA: Combustion Engineering-Superheater Ltd.

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER WILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



count on

CLINTON

GORN STARCHES

for TRAILING BLADE COATING

CLINCO OXIDIZED STARCHES

Today's high-speed coating techniques call for color formulations with high solids and high viscosities. To meet these needs, CLINTON recommends CLINCO Oxidized Starches which offer a marked increase in ink "holdout", greater uniformity of coating on the sheet and better acceptance of the coated surface for printing inks. The next time you make a formulation for use in the trailing blade coater, find out what CLINCO 330-B, CLINCO 314-B, and CLINCO 55 can do for you!

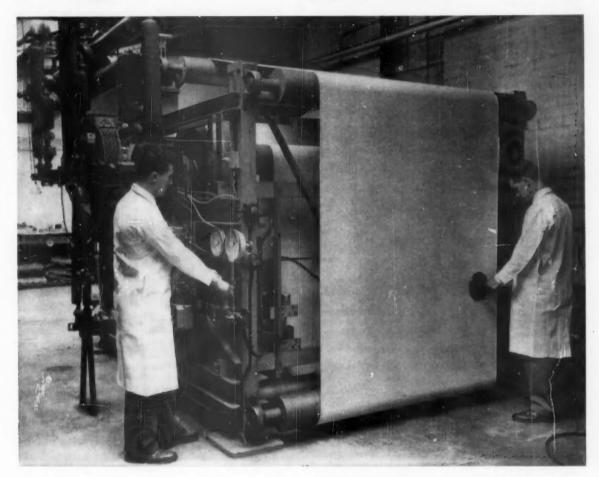
TECHNICAL SERVICE

on specific problems is yours on request. We'd like to be of service. Just write.



CLINTON CORN PROCESSING COMPANY, CLINTON, IOWA

SCAPA Research Sets the Pace!



Some of Scapa's Research Machines are large and complex. Here is a machine designed to ascertain the influence of Dryer Felts on the drying of paper. It runs up to 3,600 fpm and the cylinders take steam at 150 psi.

SCAPA DRYERS, INC. WAYCROSS GEORGIA.

Morey Paper Mill Supply Company

John B. Chandler Co.

Tipka Supply Company



Cuts maintenance costs by enabling you to eliminate event smallest vibrations... also balances turbines, pump impellers, rebuilt electric motor rotors and many other machine parts!

Stewart-Warner's new portable balancer is priced to make it economical for even small mills to own their own balancing equipment. Its portability permits easy in-place balancing and vibration analysis of assembled machinery. Indicates angle and amount of unbalance... determines rpm and amount of vibration. Pays for itself almost immediately by enabling you to reduce vibration... to cut maintenance costs... to increase operating speeds.

Also: a complete line of permanently installed cradle type balancers to meet every job type or short run precision balancing requirement.

MAIL COUPON FOR FULL DETAILS!

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SW	STEWART-WARNER CORPORATION INDUSTRIAL BALANCER DEPARTMENT Dept.QQ-120 1850 Diversey Parkway, Chicago 14, III. Please send me your industrial Balancer catalogs.
Excellence	riease send me your industrial Balancer catalogs.
Name	
Company	
Address	
City	Zone State

News of Suppliers . . .

Esco Corp. is the new name of Electric Steel Foundry Co., Portland, Ore. Organized 47 years ago to supply cast steel products for the lumber and logging industries, the firm is now widely diversified and merchandises many metals and plastics. . . . Jamesbury Corp., Worcester, Mass. ball valve manufacturer, will construct a new 80,000-sq. ft. plant on a 8½-acre site. . . . Orr Felt & Blanket Co. is preparing installation of some \$400,000 in new felt manufacturing equipment at its Piqua, Ohio plant. Firm will discontinue production of bed blankets and apparel fabrics. . . .

Hooker Chemical Corp. is substantially expanding capacity for sodium chlorate at Columbus, Miss. . . . Kohler Coating Machinery Corp. is opening new administrative and engineering offices at 9701 Cleveland Ave. N. W., Greentown, Ohio. . . . Solvay Process div., Allied Chemical Corp., is expanding chlorine-caustic soda facilities at Moundsville, W. Va., by 20,000 annual tons. . . Pfaudler Co., division of Pfaudler Permutit Inc., will build a \$750,000 research and development center at Henrietta, N. Y., a suburb of Rochester. . . .





Wilbur

Casagrande

Promoted by Huyck Felt Co.

John E. Wilbur becomes asst. mgr. of field service engineering for this division of Huyck Corp. at Rensselaer, N. Y. Prior to joining Huyck, he was associated with S. D. Warren Co. and Carton de Colombia, subsidiary of Container Corp. of America. Succeeding Mr. Wilbur as field service engineer for portion of New Jersey, Pennsylvania, Maryland, Delaware and North Carolina is John G. Casagrande. A graduate in pulp and paper from New York State College of Forestry, he was formerly with Sveen-Pedersen Co. and Personal Products Co.

H. L. Sager Upped by duPont Dyes

He becomes asst. mgr. of the New England district sales office for the Dyes & Chemicals div. He was formerly mgr. of the textile dyes section in Wilmington, Del., prior to which he was asst. sales mgr. in New England. Mr. Sager has been with du Pont in dyes and chemicals sales since 1939.



. . . Crown Zellerbach Corp. will build a chemical plant at its Bogalusa, La. pulp and paper mill. The \$1,700,000 facility will manufacture dimethyl sulfide, methyl mer capten and dimethyl sulfoxide. . . . Midwest branch factory and offices of Bristol Co. have moved to enlarged quarters at 2040 North Hawthorne Ave., Melrose Park, Ill., a Chicago suburb.

Hupp Corp., Cleveland, has enlarged its stake in infra-red radiant heating by acquisition of Horace L. Smith Jr. Inc., Richmond, Va. thermodynamics engineers. . . .

E. W. Dewan, Albany Felt Sales Engineer

He serves accounts in western New York, western Pennsylvania, Ohio and parts of Michigan. Mr. Dewan has been with the firm five years in supervisory capacities.



W. G. Price in New Eng. For Wisconsin Wire

He has been associated with Gulf Oil's Industrial Products div., as well as with Brandon dryer felts, both in the New Lingland territory. He recently completed an indoctrination course at Wisconsin Wire's Appleton, Wis. headquarters. "Wes" is active in the paper industry and a member of PIMA.



MEETING DATES CALENDAR

December 1-3

Pacific Coast PIMA (Annual Fall-Meeting) Hotel Multnomah, Portland, Ore.

December 7-9

51st Western Forestry Conference Empress Hotel, Victoria, B. C.

December 8

Kalamazoo Valley TAPPI pulping meeting Innmans Restaurant, Kalamazoo

December 12-14

U.S. Dept. of Health, Education & Welfare (National Conference on Water Pollution)

Washington, D.C.

December 13

Empire State TAPPI Metropolitan District (Dyeing of Paper) 465 Lexington Ave., New York, N.Y.

Ohio TAPPI (Plastic Fourdrinier Wires)
Manchester Hotel, Middletown, Ohio

Innuary 10

Connecticut Valley PIMA (Winter Meeting)
Publick House, Sturbridge, Mass.

January 17

Pacific TAPPI (Process and Quality Control)
Tacoma, Wash.

Ianuary 19

Michigan PIMA (Annual Papermakers Get-Together) Hotel Harris, Kalamazoo

January 24-27

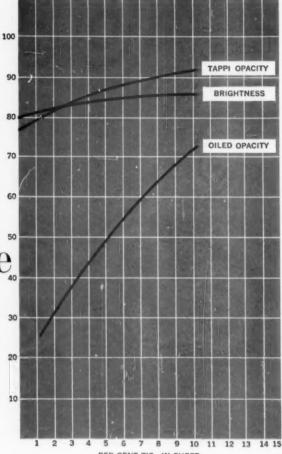
Technical Section CPPA (Annual Meeting)
Queen Elizabeth Hotel, Montreal

PULP & PAPER - December 1960





an outstanding titanium dioxide pigment made specifically for



UNITANE® 0-120 This new pigment has been developed especially for the paper industry to give maximum retention. Designed specifically for wet-end additions, it has the same high brightness and opacity as the other well-known grades of UNITANE, and in tests with chlorinated starch has repeatedly given higher retention than any other titanium dioxide tested. These excellent properties are easily translated into savings for you—maximum opacity with minimum white water losses, high brightness with minimum show-through at lower basis weight, and good printed opacity. The curves illustrate the brightness, TAPPI opacity and oiled opacity obtained with UNITANE 0-120 at various concentrations of TiO₂ in the sheet.

A comprehensive report on the application of UNITANE 0-120 is available through your Cyanamid Pigments representative. Contact him today or write



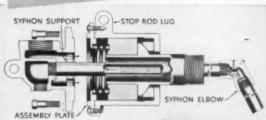
AMERICAN CYANAMID COMPANY • PIGMENTS DIVISION • 30 Rockefeller Plaza, New York 20, N.Y.

a Was Branch Offices and Warehouses in Principal Cities

WHITER AND BRIGHTER WITH UNITANE



- ... ON PAPER MACHINE DRYERS
 - CORRUGATORS
- ... CALENDERS
- . . . ROOFING MACHINES
- ... WAXERS
- ... EMBOSSERS
- ... PRINTING PRESSES



Type "SBP" shown is com-Johnson Joints it has no pack-ing, needs no lubrication or ad-justment. The syphon elbow replaces unwieldy curved condenplaces unwieldy curved conden-sate drainage pipes with two straight pipes, hinges to pass right through the joint. Write for Bulletin S-3002. Johnson Rotary Pressure Joints are avail-able for all operating speeds, pressures, mountings. pressures, mountings.



THE JOHNSON CORPORATIO 849 Wood St., Three Rivers, Mich.



Speaking of Pulpwood

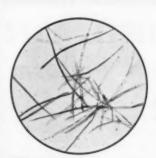
Did you know there is an Owen Grapple especially designed for the pulp and paper manufacturing field? The independent tine action . . . an exclusive Owen patent . . . affords greater grabs and larger log loads.

Write today and get convincing facts and special illustrated pulpwood bulletin ... free upon request.



Southern Corporation, Charleston, S.C.





Celgar Kraft also will contain thinner-walled fibres

Z. High Bursting Resistance

Celgar Kraft also will contain thinner-walled fibres from such species as spruce, balsam and cedar. These impart to the final paper product the high bursting resistance which is the outstanding characteristic of Eastern Canadian and Scandinavian bleached kraft softwood pulps.



Celgar Kraft



"Keep rolling with the BEST:

Colmonoy No. 2 Hard-Facing!"

Get top impact and abrasion resistance and easy welding with low-cost Colmonoy No. 2 (AC-DC) hard-surfacing electrodes. Use them on tractor treads, truck beds, log chains and chutes, any steel or manganese steel part.

Write today for more informabout Colmonoy No. 2 and rest of the Colmonoy line of surfacing alloys.

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WALL COLMONOY CORPORATION

BRAZING ALLOYS

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Particle handling in a

HEIL DRYER

means fast, uniform drying

Regardless of size, each particle is flash-dried to the same low, uniform moisture content in a Heil dryer. A 3-pass drying drum assures accurate moisture control in the finished product. Small particles move quickly through a stream of hot air to cooler zones, while heavier particles with more moisture move more slowly. Compound showering flights on each of the three cylinders keep particles moving evenly - no surging.

The result: fast, uniform drying - high production at low operating costs. You can depend on a HEIL! Why not check for yourself? Wire, write or call for complete details.



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MANUFACTURERS OF THE ARNOLD DRYER





Other Standard Equipment includes Heavy Duty Precision Ball Bearing Spindle, 26" Segmental Grinding Wheel, 25 HP TEFC Motor, Automatic Force Feed Oller, 8" x 8" Swiveling Knife Bar, Wet Grinding and Precision Wheel Dresser tion. Other Models available.

SINCE 1887

SAMUEL C. ROGERS & CO., INC.

2070 SHERIDAN DRIVE

BUFFALO 23, NEW YORK

DRYING.

PAPERS . COATINGS SILICONE · LATEX



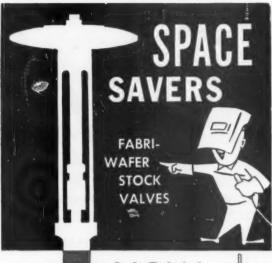
It will pay you to investigate the efficiency and economy of the new RED-RAY Type "H" Burner, latest development of RED-RAY infra red drying experience.

Write for further information to:

RED-RAY MFG. CO., INC.

318 CLIFF LANE . CLIFFSIDE PARK, N. J.

Tel.: WHitney 3-1000





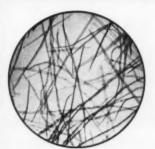
or CAST construction

Only FABRI-VALVE
Gives you all these
FEATURES!

- Inverted Packing Gland to assure perfect gate alignment (patented).
- Many alloy combinations to combat corrosion EFFECTIVELY.
- Optional O-Ring Seating.
- Surface ground gates for smooth, easy operation.
- Pre-formed, SELF LUBRICATING rubber packing for minimum maintenance. and many more advantages . . .

WEDGE GATES STOCK VALVES BUTTERFLY VALVES CHECK VALVES DIGESTER VALVES Y-PORT METERING



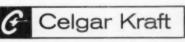


Celgar Kraft will have balanced properties

3. Balanced Properties

Through its mixture of long, strong, thick-walled fibres and its thinner-walled fibres, and due to the climatic conditions influencing tree growth, Celgar Kraft will achieve naturally a balance of strength properties which can normally only be duplicated by blending several grades of pulp.





V 5763-3

HORTON CLUTCHES

For complete accurate control

for constant slip, tension control main drives for inching and slow acceleration applications



Why tolerate a clutch that does only half the job? Horton Variable Speed, air actuated clutches cost less, yet give uniform control at any degree of engagement without overheating! Assures perfect rolls every time!

Simple, sound and foolproof, Horton Clutches can be installed and maintained by your personnel. Fractional to 200 h.p. sizes with *complete drive package* if you specify.

Over 3 decades of dependable service

HORTON Manufacturing Company, Inc.

1179 - 15th Avenue S.E., Minneapolis 14, Minnesota

DRAPER BROTHERS COMPANY CANTON, MASS.

CHIEF INDUSTRIAL ENGINEER

New England division of national corporation seeks capable manager to di-rect expanding staff. Duties involve administration of department working on layout, methods improvement, work measurement, incentive plan, job evaluation and related activities. En-gineering degree strongly preferred. Must have minimum of 6 to 8 years industrial engineering experience and knowledge of paper and/or pulp mill operations. Attractive salary commensurgte with responsibilities. Your reply will be treated confidentially. Our employees are aware of this opening. Reply to Box P-305, PULP & PAPER, 370 Lexington Avenue, New York 17,

PAPER CHEMIST

Position available in \$7,500 to \$10,000 range for Paper Chemist to accept responsibility in small West Coast developmental paper mill. Experience in commercial paper making furnish and refining techniques required. Exceptional variety of products from this mill offer continuing challenge and educational opportunity to progress in the technical field, from raw fiber through finishing operations. Our employees know of this advertisement. Write to Box P-306, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y. Lexington Ave., New York 17, N. Y

TECHNICAL DIRECTOR

wanted for a progressive western fine wanted for a progressive western fine grade paper company. If you have had experience as a Technical Director together with a wide experience in coating formulations and their applications both on and off machine, size presses etc., then send us a brief resume of your work history and references. Reply to Box P-313, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

TECHNICAL DIRECTOR

With minimum 8 years experience required by Consulting Engineers in British Columbia.

The successful applicant will assist the senior process engineer with feasability reports and estimates, equipment recommendations and process evaluations.

Salary commensurate. Fringe benefits offered.

Replies will be treated in strictest confidence. Write to Box P-309, PULP & PAPER, 370 Lexington Avenue, New York 17, N. Y.

PULP MOLDING

Company entering structural pulp molding field has openings in R&D. Excellent prospects. Salaries open. CHEM. ENGR. (Equivalent experience) in field of Polymers-Resins-Bitumastic and other binders ENGINEER (equivalent). ners-resins-humastic and other binders ENCINEER (equivalent experience) with pulps, its properties, characteristics, and processing. Also TECHNICIANS. Send one page resume. Lessheim, Hillenbrand Industries, Batesville, Indiana.

POSITION WANTED

Technical Superintendent-Kraft-experienced in control, research, and operations. Write to Box P-297, PULP & PAPER, 370 Lexington Avenue, New York 17, N. Y.

RESIDENT MANAGER

Substantial size fine paper and pulp producer in Northeast has excellent oppor-tunity as Resident Manager. Will direct production; quality, process, and produc-tion control; material handling; waretion control; material handling; ware-housing, shipping and receiving; cost standards; maintenance; and technical sales service. Require 10 to 15 years of responsible line operating experience in the paper industry, including experience as Paper Mill or Finishing Room Superintendent. Knowledge of pulp desirable but not mandatory. Degree in Chemistry, Ch.E., or M.E., or equivalent. Age range 35-50. Salary \$18-25,000. Please reply fully, in confidence, including earnings and size of mills. Our people know of this fine opening. Reply to Box P-307, PULP & PAPER, 370 Lexington Ave., New York 17. N. Y.

PROJECT CHEMIST

Immediate opening for a graduate chemist or chemical engineer, with two to four years experince in the paper industry. Bleached sulphate board mill, located in the Southeast. Salary open, depending upon qualifications. All replies confidential. Send complete resume to Box P-311, Pulp & Paper, 370 Lexington Avenue, New York 17, New York.

ANY SPARE TIME?

Make your paper mill knowledge add to your income. No selling. Confidential. Write to Box P-302, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

MANUFACTURING MANAGER PAPER and PULP

Graduate of recognized Pulp & Paper school or degree in chemistry, chemical engineering or mechanical engineering. Must be an experienced Fine Paper maker with a minimum of 10 years in middle or top "LINE" manufacturing management.

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ADVERTISERS' INDEX

Albany Felt Co. 51 Allen-Sherman-Hoff Co. 54 Allis-Chalmers Mfg. Co. 21	Emerson Mfg. Co inside front cover	Nopco Chemical Co
Alloy Steel Products Co 22	Fabri-Valve Co. of America 161	
American Bitumuls & Asphalt Co 130	Falk Corp	Oilgear Co
American Cyanamid Co. Industrial Chemicals Div	H. K. Ferguson Co 164 Foxboro Co 56-57 Fuller Co 52	Owen Bucket Co
Pigments Div	Fuller Co	
American Hoist & Derrick Co 128		Parsons & Whittemore, Inc 50
American Paper & Pulp Co 124 Anglo Paper Products, Ltd 149	General Dyestuff Co 61-62	Perkins-Goodwin Co back cover
	Glidden Co 17-18	Porritts & Spencer 30
Appleton Machine Co	B. F. Goodrich Industrial Products Co. 4 Gottesman & Co. 6	William Powell Co
Babcock & Wilcox		Rader Pneumatics, Inc 46
Becco Chemical Div.,	W 1 W 0	Red-Ray Mfg. Co., Inc 160
Food Machinery & Chemical Corp. 10	Hanchett Mfg. Co 157	Rice Barton Corp 1
Beloit Iron Works 47, 95-96	Harris-Seybold	Ridge Tool Co 146
Beloit Eastern Corp 19	Heil Co	Riegel Paper Corp 131
Bird Machine Co 2	Horton Mfg. Co	Samuel C. Rogers & Co., Inc 160
John W. Bolton & Sons,	Howard Smith Paper Mills Ltd 135	Roots-Connersville Blower 12
Inc inside front cover	Huyck Felt Co	J. O. Ross Engineering Corp 60
Brandon Sales, Inc		
Buckeye Cellulose Corp	Improved Machinery Inc 48	Scapa Dryers, Inc 155
H. W. Butterworth & Sons Co 138	John Inglis Co., Ltd 26	Signode Steel Strapping Co 137
	International Harvester, Co 102-103	J. E. Sirrine Co
	International Nickel Co., Inc 63	Ray Smythe Co 163
Cameron Machine Co 27		Southwestern Engineering Co 150
Carthage Machine Co 134		Southworth Machine Co 24
J. I. Case Co 109	Jacksonville Blow Pipe Co 148	Stauffer Chemical Co 131
Caterpillar Tractor Co 106, 115	Jagenberg	Stebbins Engineering & Mfg. Co 58
Celgar Ltd 157, 159, 161	Jamesbury Corp 151	Stewart-Warner Corp 156
Chemipulp Process Inc	Jeffrey Mfg. Co	Sutorbilt Corp 59
Ciba Co. Inc.	Johns-Manville Corp 32	
Ciba Co., Inc	Johnson Corp 159	Texas Gulf Sulphur Co 123
Clinton Corn Processing Co 154	E. D. Jones Corp 47	Textile Paper Products, Inc 142
Combustion Engineering Inc 153		Titanium Pigment Corp 129
Corn Products Co	r w. 1 c	Torrington Co
Crane Co	Knox Woolen Co 165	Towmotor Corp 25
	Samuel M. Langston Co 118	U.S. Steel Corp 116-117
Darling & Co inside back cover	Link-Belt Co 31	
Deere & Co	Lodding Engineering Corp 28	11 1 1 11 1 m
DeZurik Corp	Lubriplate Div.,	Valley Iron Works
Dominion Engineering Co., Ltd 42	Fiske Bros. Refining Co 152	R. T. Vanderbilt Co., Inc 66
Draper Bros. Co		Vapo Systems, Inc 152
Dryden Paper Co., Ltd 149		
E. I. du Pont de Nemours & Co 44-45	Manchester Machine Co 121	Wall Colmonoy Corp 159
	Mt. Vernon Mills, Inc 43	Waterbury Felt Co., Inc 30
***		West End Chemical Co 64
Ebasco Services Inc 101		Westinghouse Electric 14-15, 140-141
Electric Steel Foundry Co	Nash Engineering Co 136	West Virginia Pulp & Paper Co 127
Elwell-Parker Electric Co 144	Naylor Pipe Co 145	Weyerhaeuser Co 168



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The Last Word PAPER

Editors' Page

Memo from the Publisher:

Beginning January, 1961, we will introduce a new dimension in business publishing in the pulp and paper industry. PULP & PAPER will come to you every two weeks in a fresh new format and in a compact "standard" size.

We call this new dimension the "Smith" dimension because it is being guided by Cortland Gray Smith, an outstanding magazine consultant with more than twenty years experience with McGraw-Hill.



Briefly, we are going to help you get the news of the industry more quickly and more easily. We will serve you with crisper writing by a team of editors who have achieved some prominence in the industry because of the depth of their reporting and their "feel" of the industry.

In each issue you will get a quick, easy-to-read survey of significant developments, major trends, new mills and progress in pulpwood activities for which PULP & PAPER has become famous.

The idea for this new, compact P&P had its genesis several years ago and practical efforts began to bring it to fruition many months ago. The first issue of this new magazine will be in your hands on January 9th. The editors are very much excited and also aware of the responsibility to serve you better. As publishers, we sincerely hope that we will fulfill the main purpose of any industry publication which is to be a good information tool with the major objective of supplying busy people like yourself with information so that you can do and know your job better.

We have invested considerable time, money and talent to bring what we hope will be your "bible" in this exciting, growing, pulp, paper, paperboard and pulpwood industry.

After you have seen your new PULP & PAPER, we would certainly like to know how much you like it, what you don't like and any further suggestions you may have for improving it.

WILLIAM B. FREEMAN
President
Miller Freeman Publications, Inc.

Milt Bailey's Contributions to Growth

The stimulating ideas and the refreshingly original outlook which issued from the keen mind of Milton R. Bailey will long be remembered in this industry. Many a pulp and paper leader, in this country and abroad, placed a very high value on the views and the advice he received from Mr. Bailey. For Milt Bailey had a remarkably broad grasp of business problems and especially of new undertakings.

The editors of this magazine were just a few of the many persons who came away from long talks with the late Mr. Bailey, executive vice president of Bulkley Dunton Pulp Co., with a bigger conception on this industry's potentials and a sharper will and spirit to grow wisely with this industry.

No one can question that for this industry to lose the creative spirit and intellect of such a man as Milt Bailey is a genuine loss.

Canadian Comments

In Canada, where billions of U.S. dollars have been invested in pulp and paper, there has been a tendency to criticize what some Canadians describe as "growing domination" of the Canadian economy by U.S. corporations.

One distinguished Canadian who doesn't agree with this sentiment is Robert M. Fowler, president of the Canadian Pulp & Paper Assn., Montreal. Addressing the Empire Club in Toronto recently, Mr. Fowler described as "childish and churlish" the inclination to blame the U.S. for Canada's ailments. He admitted growth in the Canadian economy had slowed down during the past four years and that the average Canadian probably had things better four years ago when industry was expanding rapidly in almost every direction. But Canada's temporary slide-off in activity could not reasonably be laid at the door of the country's big neighbor.

"If we are not careful, we may find that foreign investment will turn to other more agreeable and enticing places," said Mr. Fowler. "If this happens, we will wake up to find that our growth has been sharply and shockingly arrested."

Mr. Fowler also branded as "dangerous and unrealistic" a recent movement in Canada towards greater tariff protection, as evidenced by the Canadian automobile industry's efforts to increase the duties or taxes on imported cars.

Mr. Fowler's own remedy for Canada's current economic trouble is moderate and gradual expansion of the money supply and leveling of the Canadian dollar to par with the U.S. dollar. He would also advocate a revision of the tax structure to take into account new economic conditions.

Other spokesmen for Canada's pulp and paper industry agree with Mr. Fowler in his opinion of the protectionist trend. Harold S. Foley, deputy chairman of MacMillan, Bloedel & Powell River and a former chairman of the executive committee, Canadian Pulp & Paper Assn. has openly advocated free trade between Canada and the U.S., to be achieved gradually. Other leaders in the industry have supported this plea.



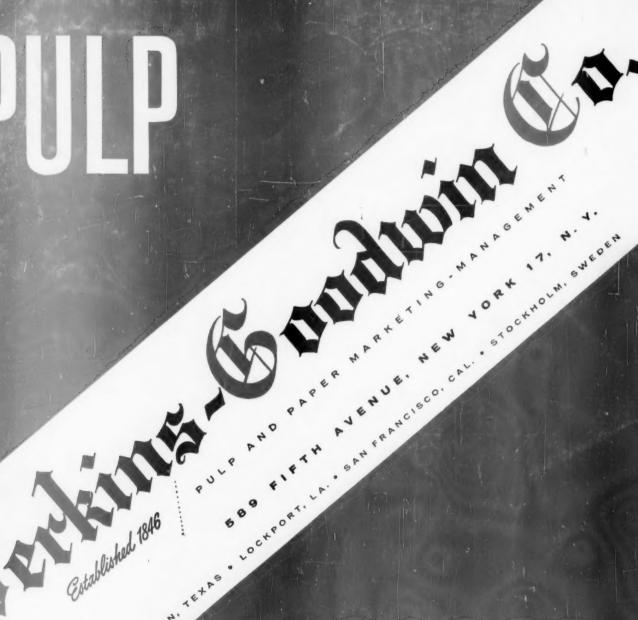
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